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FAA Approved AIRPLANE FLIGHT MANUAL SUPPLEMENT

G1000 Integrated Avionics System and GFC 700 AFCS In Hawker Beechcraft King Air 300/300LW Aircraft

Dwg. Number: 190-00716-02 Rev. 3

This Supplement is Applicable to the Following Manuals:

101-590097-3
101-590097-107

This Supplement must be attached to the FAA Approved Airplane Flight Manual when the GARMIN G1000 Integrated Avionics System is installed in accordance with STC SA01535WI-D. The information contained herein supplements the information of the basic Airplane Flight Manual. For Limitations, Procedures, and Performance information not contained in this Supplement consult the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

Airplane Serial Number: _____

Airplane Registration Number: _____

FAA Approved By: _____

Robert G. Murray
ODA STC Unit Administrator
GARMIN International, Inc
ODA-240087-CE

Date: 2/28/2014

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Log of Revisions

Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Supplement for

G1000 Integrated Avionics System and GFC 700 AFCS In Hawker Beechcraft King Air 300/300LW Aircraft

REV NO.	PAGE NO(S)	DESCRIPTION	DATE OF APPROVAL	FAA APPROVED
1	ALL	Original Issue	05/11/2012	Robert G. Murray, ODA STC Unit Administrator GARMIN International, Inc. ODA-240087-CE
2	ALL	Incorporate system software 0985.06, revised AHRS areas of operation, added a VNAV limitation, revised system temperature limitations, revised TAWS database coverage areas, miscellaneous editorial corrections, repaginated	11/16/2012	Robert G. Murray, ODA STC Unit Administrator GARMIN International, Inc. ODA-240087-CE
3	ALL	Incorporate system software 0985.07, revised AHRS areas of operation to account for GRS 7800 installations	See Cover	See Cover

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Section 1 - General

The information in this supplement is FAA-approved material and must be attached to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual (POH/AFM) when the airplane has been modified by installation of the GARMIN G1000 Integrated Avionics System and GFC 700 Digital Automatic Flight Guidance System in accordance with GARMIN International, Inc. approved data.

The information in this supplement supersedes or adds to the basic POH/AFM only as set forth below. Users of the manual are advised to always refer to the supplement for possibly superseding information and placarding applicable to operation of the airplane.

The GARMIN G1000 system installed in the Hawker Beechcraft King Air 300 Aircraft provides a fully integrated Display, Communications, Navigation and Flight Control system. Functions provided by the G1000 system include: Primary Flight Information, Powerplant Monitoring, Navigation, Communication, Traffic Surveillance, TAWS Class A or B, Weather Avoidance, and a three-axis automatic flight control / flight director system with optional Electronic Stability & Protection.

Use of this supplement requires Garmin G1000 system software version 0985.07 or later to be installed in the aircraft. Pilots are advised to carefully review the contents of this revision before operating the airplane.

USE OF THE HANDBOOK

The following definitions apply to WARNINGS, CAUTIONS and NOTES found throughout the handbook:

WARNING

Operating procedures, techniques, etc., which could result in personal injury or loss of life if not carefully followed.

CAUTION

Operating procedures, techniques, etc., which could result in damage to equipment if not carefully followed.

NOTE

Operating procedures, techniques, etc., which is considered essential to emphasize.

OPERATIONAL APPROVALS

The Garmin G1000 Integrated Avionics GNSS navigation system installed in this airplane is a GPS system with a Satellite Based Augmentation System (SBAS) comprised of two TSO-C145a Class 3 approved Garmin GIA 63Ws, TSO-C146a Class 3 approved Garmin GDU 104X and GDU 1500 Display Units, GARMIN GA36 and GA37 antennas, and GPS software version 3.2 or later approved version. The G1000 GNSS navigation system in this airplane is installed in accordance with AC 20-138C.

The Garmin G1000 Integrated Avionics GNSS navigation system as installed in this airplane complies with the requirements of AC 20-138C and is approved for navigation using GPS and GPS/SBAS (within the coverage of a Satellite Based Augmentation System signals complying with ICAO Annex 10) for IFR en route, terminal area, non-precision approach, and approach procedures with vertical guidance operations.

The Garmin G1000 Integrated Avionics GNSS navigation system as installed in this airplane complies with the equipment, performance, and functional requirements to conduct RNAV and RNP operations in accordance with the following table:

Specification	Reference Documents	ICAO Flight Plan Code	Notes
RNAV 10 (RNP 10) (Oceanic)	FAA Order 8400.12C	A1	GPS Class II navigation in oceanic and remote navigation without reliance on other long-range navigation systems when used in conjunction with the G1000 WFDE Prediction program, part number 006-A0154-01 (010-G1000-00) or later approved version. This does not constitute an operational approval. Part 91, Part 91 subpart K, 121, 125, and 135 operators require operational approval.
B-RNAV/ RNAV 5 (Europe)	FAA AC 90-96A CHG 1, EASA AMC 20-4	B2	This does not constitute an operational approval.
RNAV 2	FAA AC 90-100A	C2	Includes RNAV Q and T routes. In accordance with AC 90-100A, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-100A are authorized to fly RNAV 2 and RNAV 1 procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.
RNAV 1	FAA AC 90-100A	D2	Includes RNAV terminal departure and arrival procedures. In accordance with AC 90-100A, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-100A are authorized to fly RNAV 2 and RNAV 1 procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.
P-RNAV (Europe)	FAA AC 90-96A CHG 1, JAA TGL 10 Rev 1	D2	This does not constitute an operational approval.

Specification	Reference Documents	ICAO Flight Plan Code	Notes
RNP 4 (Oceanic)	FAA Order 8400.33	L1	Primary means of Class II navigation in oceanic and remote navigation without reliance on other long-range navigation systems when used in conjunction with the G1000 WFDE Prediction program, part number 006-A0154-01 (010-G1000-00) or later approved version. Additional equipment may be required to obtain operational approval to utilize RNP-4 performance. This does not constitute an operational approval. Part 91, Part 91 subpart K, 121, 125, and 135 operators require operational approval.
RNP 1	FAA AC 90-105	O2	Includes RNP terminal departure and arrival procedures. For airplanes that have system software 0985.07 or later installed, this includes procedures with RF (radius to fix) legs. In accordance with AC 90-105, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-105 are authorized to fly RNP 1 procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.
RNP APCH LNAV minima	FAA AC 90-105, EASA AMC 20-27	S1	Includes non-precision approaches based on conventional navigation aids with “or GPS” in the title and area navigation approaches titled “GPS”, “RNAV(GPS)”, and “RNAV(GNSS)”. For airplanes with system software 0985.07 or later installed, this includes procedures with RF (radius to fix) legs. In accordance with AC 90-105, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-105 are authorized to fly RNP APCH LNAV minima procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.
RNP APCH LNAV/VNAV minima	FAA AC 90-105, EASA AMC 20-27 with CM-AS-002	S2	Includes area navigation approaches titled “RNAV(GPS)” and “RNAV(GNSS).” For airplanes with system software 0985.07 or later installed, this includes procedures with RF (radius to fix) legs. Vertical guidance is based on GPS/SBAS when within SBAS coverage and by baro VNAV (system software 0985.07 or later) when outside SBAS coverage. In accordance with AC 90-105, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-105 are authorized to fly RNP APCH LNAV/VNAV minima procedures. Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.

Specification	Reference Documents	ICAO Flight Plan Code	Notes
RNP APCH LP minima	FAA AC 90-107	N/A	For airplanes with system software 0985.07 or later installed, this includes area navigation approaches titled "RNAV(GPS)" and "RNAV(GNSS)" including procedures with RF legs. LP minima are available only when within SBAS coverage. In accordance with AC 90-107, Part 91 operators (except subpart K) following the operational considerations and training guidance in AC 90-107 are authorized to fly RNP APCH LP minima procedures. Part 91 subpart K, 121, 125, 133, 135, and 137 operators require operational approval.
RNP APCH LPV minima	FAA AC 90-107, EASA AMC 20-28	N/A	Includes area navigation approaches titled "RNAV(GPS)" and "RNAV(GNSS)." For airplanes with system software 0985.07 or later installed, this includes procedures with RF (radius to fix) legs. LPV minima are available only when within SBAS coverage. In accordance with AC 90-107, Part 91 operators (except subpart K) following the operational considerations and training guidance in AC 90-107 are authorized to fly RNP APCH LPV minima procedures. Part 91 subpart K, 121, 125, 133, 135, and 137 operators require operational approval.

Garmin International holds an FAA Type 2 Letter of Acceptance (LOA) in accordance with AC 20-153 for database integrity, quality, and database management practices for the Navigation database. Flight crews and operators can view the LOA status at FlyGarmin.com then select" Type 2 LOA Status".

Navigation information is referenced to the WGS-84 reference system.

ELECTRONIC FLIGHT BAG

The G1000 Integrated Avionics System as installed in this aircraft supports approval of AC 120-76A Hardware Class 3, Software Type B Electronic Flight Bag (EFB) electronic aeronautical chart applications when using current FliteChart or ChartView data. Additional operational approvals may be required. Garmin International holds an FAA Type 2 Letter of Acceptance (LOA) in accordance with AC 20-153 for database integrity, quality, and database management practices for the FliteChart database. Flight crews and operators can view the LOA status by selecting the Type 2 LOA status quick link at www.FlyGarmin.com.

For operations under 14 CFR Part 91, it is suggested that a secondary or back up source of aeronautical information necessary for the flight be available to the pilot in the aircraft. The secondary or backup information may be either traditional paper-based material or displayed electronically. If the source of aeronautical information is in electronic format, operators must determine non-interference with the G1000 system and existing aircraft systems for all flight phases.

REDUCED VERTICAL SEPARATION MINIMUMS (RVSM)

This aircraft has been evaluated in accordance with 14 CFR Part 91, Appendix G, "Operations in Reduced Vertical Separation Minimum (RVSM) Airspace," and FAA Advisory Circular 91-85, "Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimums Airspace," and is qualified for RVSM operations as a group aircraft. This finding does not constitute approval to conduct RVSM operations.

ABBREVIATIONS AND TERMINOLOGY

The following glossary is applicable within the airplane flight manual supplement

AC	Advisory Circular
ADC	Air Data Computer
ADF	Automatic Direction Finder
AFCS	Automatic Flight Control System
AFM	Airplane Flight Manual
AFMS	Airplane Flight Manual Supplement
AGL	Above Ground Level
Ah	Amp hour
AHRS	Attitude and Heading Reference System
AIRAC	Aeronautical Information Regulation And Control
ALT	Altitude, or AFCS altitude hold mode, or ALT button on the GMC 710 AFCS Mode Controller
ALTS	AFCS altitude capture using the altitude in the altitude preselect window
ALTV	AFCS altitude capture using the altitude from the VNAV profile vertical constraint
AMMD	Airport Moving Map Display
AP	Autopilot
APR	AFCS Approach mode, or APR button of GMC 710 AFCS mode controller
APTSIGNS	Airport Signs (SVS softkey on the PFD)
APV	Approach with Vertical Guidance
ATC	Air Traffic Control
AUX	Auxiliary
BANK	Low-bank mode of the AFCS
BARO	Barometric Setting
BAT	Battery
BC	Back Course
BRNAV	Basic Area Navigation
BRT	Bright
CB	Circuit Breaker
CDI	Course Deviation Indicator
CFR	Code of Federal Regulations
CLR	Clear
COM	Communication radio
CRS	Course
CWS	Control Wheel Steering

DA	Decision Altitude
DC	Direct Current
DG	Directional Gyro
DH	Decision Height
DL LTNG	Connext Data Link Lightning
DME	Distance Measuring Equipment
DN	Down
DR	Dead Reckoning
EC	Error Correction
EFB	Electronic Flight Bag
EIS	Engine Indication System
ELEC	Electrical
ENT	Enter
ESP	Electronic Stability and Protection
FAF	Final Approach Fix
FD	Flight Director
FLC	AFCS Flight Level Change mode, or FLC button on the GMC 710 AFCS mode controller
FLTA	Forward Looking Terrain Awareness
FMS	Flight Management System
FPM	Flight Path Marker or Feet Per Minute
FSB	Fasten Seat Belts
FSD	Full Scale Deflection
ft	Feet
ft/min	Feet/Minute
GA	Go-around
GCU	Garmin Control Unit
GDC	Garmin Air Data Computer
GDU	Garmin Display Unit
GEA	Garmin Engine/Airframe Unit
GEN	Generator
GEO	Geographic
GFC	Garmin Flight Control
GIA	Garmin Integrated Avionics Unit
GMC	Garmin Mode Control Unit
GP	GPS Glide Path
GPS	Global Positioning System

GPWS	Ground Proximity Warning System
GRS	Garmin Reference System (AHRS)
GS	Glide Slope
GSA	Garmin Servo Actuator
GSR	Garmin Iridium Satellite Radio
GTS	Garmin Traffic System
GWX	Garmin Weather Radar
HDG	AFCS heading mode or the HDG button on the GMC 710 AFCS Mode Controller
HITS	Highway in the Sky
HPa	Hectopascal
HSI	Horizontal Situation Indicator
IAF	Initial Approach Fix
IAP	Instrument Approach Procedure
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
in-Hg	inches of mercury
INH	Inhibit
ITT	Interstage Turbine Temperature
KIAS	Knots Indicated Air Speed
LCD	Liquid Crystal Display
LDA	Localizer Type Directional Aid
LNAV	Lateral Navigation
LNAV + V	Lateral Navigation with Advisory Vertical Guidance
LNAV/VNAV	Lateral Navigation / Vertical Navigation
LOA	Letter of Acceptance
LOC	Localizer
LOI	Loss of Integrity (GPS)
LP	Localizer Performance
LPV	Localizer Performance with Vertical Guidance
LRU	Line Replaceable Unit
LTNG	Lightning (XM Weather Product)
M	Mach
MAP	Missed Approach Point
MAXSPD	Maximum Speed, AFCS Overspeed Protection mode

MDA	barometric minimum descent altitude
MEL	Minimum Equipment List
MFD	Multi Function Display
MLS	Microwave Landing System
M_{MO}	Maximum operation limit speed in mach
MNPS	Minimum Navigational Performance Specifications
MSL	Mean Sea Level
NAT	North Atlantic Track
NAV	Navigation, or AFCS navigation mode, or NAV button on the GMC710 AFCS Mode Controller
NEXRAD	Next Generation Radar (XM Weather Product)
NM	Nautical Mile
NPA	Non-precision Approaches
OAT	Outside Air Temperature
OBS	Omni Bearing Selector
OVR	Override
P/N	Part Number
PDA	Premature Descent Alert
PFD	Primary Flight Display
PFT	Pre-Flight Test
PIT	AFCS pitch mode
POH	Pilot's Operating Handbook
PRNAV	Precision Area Navigation
PROC	Procedure button on the GDU or GCU 477
PSI	Pounds per Square Inch
PTCH	Pitch
RA	Radar Altimeter, or Radar Altitude, or TCAS II Resolution Advisory
RF	Radius-to-Fix
RNAV	Area Navigation
RNP	Required Navigation Performance
ROL	AFCS roll mode
RPM	Revolutions per Minute
RVSM	Reduced Vertical Separation Minimums
SBAS	Satellite Based Augmentation System
SDF	Simplified Directional Facility
SID	Standard Instrument Departure
SPD	Speed button on the GMC 710 AFCS Mode Controller. Toggles the FLC

	speed between Mach and IAS references.
STAR	Standard Terminal Arrival Route
STBY	Standby
STC	Supplemental Type Certificate
STD	Standard
SUSP	Suspend
SVS	Synthetic Vision System
SYN TERR	Synthetic Terrain softkey
SYN VIS	Synthetic Vision softkey
TA	Traffic Advisory
TAWS	Terrain Awareness and Warning System
TCAS	Traffic Collision Avoidance System
TEMP	Temperature
TIS	Traffic Information System
TMR	Timer
TO	Take off
TOD	Top of Descent
TSO	Technical Standard Order
VAPP	AFCS VOR Approach Mode
VCO	Voice Call Out
Vdc	Volts DC
VDI	Vertical Deviation Indicator
VDP	Visual Descent Point
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
V_{MO}	Maximum operation limit speed in knots
VNAV	Vertical Navigation
VNV	Vertical Navigation button on the GMC 710 AFCS Mode Controller
VOR	VHF Omni-directional Range
VPTH	Vertical path
VS	Vertical Speed
WAAS	Wide Area Augmentation System
WFDE	WAAS Fault Detection/Exclusion
WGS-84	World Geodetic System – 1984
WSHLD	Windshield
XFR	Transfer button on the GMC 710 AFCS Mode Controller

XM	XM satellite system
XPDR	Transponder
YD	Yaw Damper

Section 2 - Limitations

INTRODUCTION

The G1000 Cockpit Reference Guide for Hawker Beechcraft King Air 300/B300 series, GARMIN part number 190-01344-01 Revision A or later, must be immediately available to the flight crew during all phases of flight when system software 0985.07 is installed.

AIRSPEED LIMITATIONS AND INDICATOR MARKINGS

No changes were made to the airplane's airspeed limitations. The airspeed indicators on the Primary Flight Displays (PFDs) and the standby airspeed indicator are marked in accordance with the airplane's POH/AFM.

A red low speed awareness band is marked on the PFDs in red from 20 – 81 KIAS. The low-speed awareness band is suppressed while the airplane is on the ground. The low-speed awareness band appears in flight two seconds after main gear liftoff.

The standby airspeed indicator is marked in accordance with the airspeed markings called out in the airplane's AFM/POH. The standby airspeed indicator is not marked with a low speed awareness band.

POWER PLANT LIMITATIONS AND INDICATOR MARKINGS

No changes were made to the airplane's engine operating limits. The engine gauges are marked as shown in the following table. Refer to the latest Airplane Flight Manual or appropriate Airplane Flight Manual Supplement for engine and propeller limitations.

NOTE

The gauge indicator pointer and digital display will flash inverse red/white video for 5 seconds, then remain steady red, if the indicated engine parameter exceeds its established limit. The gauge indicator digital display will change to yellow for "caution" conditions.

OPERATING PARAMETER	PT6A-60A ENGINES COLOR MARKINGS & RANGES			
	Red Arc/Radial (Minimum Limit)	Green Arc (Normal)	Yellow Arc (Caution)	Red Arc/Radial (Maximum Limit)
Torquemeter (%)	--	0 to 100 (a)	--	100 (b)(c)(d)
ITT (ºC)	--	400 to 820 (e)	--	820 (f)(g)(h)
Prop N_2 (RPM)	--	1050 to 1700 (i)	--	1700 (j)(k)(l)
Gas Generator N_1 (%)	--	62 to 104	--	104
Oil Temperature. (ºC) (k)	--	0 to 99 (m)	--	99 (m)
Oil Pressure (psi) (j)	60 (n)	90 to 135 (n)	60 to 90 (n)	135 (n)

Footnotes:

(a) Torque limit applies within range of 1000 - 1700 propeller RPM (N_2). Below 1000 RPM, torque is limited to 62%.

(b) Torque indications between 102% and 156% are time limited to 20 seconds.

(c) To account for power setting accuracy and steady state fluctuations, inadvertent torque excursions up to 102% is time limited to 7 minutes.

(d) Within transient torque values, the torque indicator will display green digits and a white pointer. After 5 seconds, the digits will flash alternating red and white background with a flashing red pointer for 5 seconds. After 5 seconds of flashing, the indication is steady white digits/red background and the pointer is red. Above 156% torque, the indication immediately begins flashing for 5 seconds before displaying steady white digits on a red background and a red pointer.

(e) Maximum ITT during idle is 750ºC. High ITT at ground idle may be corrected by reducing accessory load and/or increasing N_1 RPM.

(f) ITT indication between 820ºC and 850ºC is time limited to 20 seconds.

(g) ITT starting limit at 1000ºC (red triangle) is time limited to 5 seconds.

(h) Within transient ITT values, the ITT indicator will display green digits and a white pointer. After 20 seconds between 820°C and 850°C (or above 1000°C for more than 5 seconds in Starting Mode), the ITT digital indication will flash alternating red and white background with a flashing red pointer for 5 seconds. After 5 seconds of flashing, the indication is steady white digits/red background and the pointer is red. In Normal Mode while above 850°C, the indication immediately begins flashing for 5 seconds before displaying steady white digits on a red background and a red pointer.

(i) Maximum reverse propeller operation is limited to 1650 RPM N_2 speed.

(j) Propeller (N_2) speeds between 1735 RPM and 1870 RPM are time limited to 20 seconds.

(k) To account for power setting accuracy and steady state fluctuations, inadvertent propeller RPM excursions up to 1735 RPM are time limited to 7 minutes.

(l) When within transient RPM values, the torque indicator will display green digits and a white pointer. After 7 minutes above 1735 RPM, or after 20 seconds between 1735 and 1870 RPM, the digits will flash alternating red and white background with a flashing red pointer for 5 seconds. After 5 seconds of flashing, the indication is steady white digits/red background and the pointer is red. Above 1870 RPM, the indication immediately begins flashing for 5 seconds before displaying steady white digits on a red background and a red pointer.

(m) Oil temperature limits are -40ºC and +110 ºC. However, temperatures between 99ºC and 110 ºC are limited to a maximum of 10 minutes. When between 99ºC and 110 ºC, the oil temperature indicator will display black digits on a yellow background for 10 minutes. After 10 minutes, or immediately if above 110°C, the indication will immediately flash alternating red and white background with a flashing red pointer for 5 seconds. After 5 seconds of flashing, the indication is steady white digits/red background and the pointer is red.

Below 0°C to -40°C, the digital indication will be black digits on a yellow background. Below -40°C, the digital indication will be white digits on a red background.

(n) Normal oil pressure is 90 to 135 psi at gas generator speeds above 72%. With engine torque below 62%, minimum oil pressure is 60 psi at normal oil temperature (60° - 70°C).

Oil pressures under 90 psi are undesirable. Under emergency conditions, to complete a flight, a lower oil pressure limit of 60 psi is permissible at a reduced power, not to exceed 62% torque. Oil pressures below 60 psi are unsafe and require that either the engine be shut down or a landing be made at the nearest suitable airport, using the minimum power required to sustain flight.

Fluctuations of plus or minus 10 psi are acceptable.

During extremely cold starts, oil pressure may reach 200 psi (red triangle). In flight, oil pressures above 135 psi but not exceeding 200 psi are permitted only for the duration of the flight.

MANEUVER LIMITS

No changes have been made to the aircraft's maneuver limits. The Hawker Beechcraft Super King Air 300 is a Normal Category airplane. Acrobatic maneuvers, including spins, are prohibited.

OPERATIONS IN RVSM AIRSPACE

The airplane is not permitted to operate in RVSM airspace if the static ports are damaged, or if damage or surface irregularities are found within the RVSM critical region.

The pilot and copilot PFDs must display the on-side ADC information for operations in RVSM airspace.

G1000 INTEGRATED AVIONICS SYSTEM

The GARMIN G1000 Cockpit Reference Guide P/N 190-01344-00, Rev B, or later FAA accepted revision, must be immediately available to the flight crew during all phases of flight.

Tuning of the COM and NAV radios using the GCU477 controller must be done from the left seat pilot's station and only referencing the pilot's PFD.

Required flight crewmembers must wear and use headsets when the overhead cockpit speaker audio is selected OFF.

Do not take off unless all display units are installed and operational.

Do not take off with any display in reversionary mode.

Do not take off with any of the following messages displayed in the ALERTS window:

GPS1 FAIL and GPS2 FAIL simultaneously	PFD1 SERVICE
GPS NAV LOST	PFD2 SERVICE
GIA1 SERVICE	GMA1 SERVICE
GIA2 SERVICE	GMA2 SERVICE
MFD SERVICE	GEO LIMITS

The G1000 system must be turned on and operated for at least 30 minutes before takeoff if ground outside air temperature is -40°C (-40°F) or below.

The following temperature limitations apply only to aircraft with G1000 systems installed per Garmin drawing 005-00629-00 Revision 6 or previous and **not** modified by Garmin service bulletin No. 1375:

- Do not takeoff if the PFD1 FAN FAIL, PFD2 FAN FAIL or MFD FAN FAIL is displayed in the ALERTS window **AND** the Outside Air Temperature is greater than 41°C (106°F) **AND** cabin air conditioning is inoperative.

- Do not takeoff if GIA1 FAN FAIL or GIA2 FAN FAIL is displayed in the ALERTS window **AND** the Outside Air Temperature is greater than 42°C (107°F).

- Ground operation of the G1000 system is limited to 18 minutes when the Outside Air Temperature is greater than 47°C (116°F) **AND** cabin air conditioning is inoperative.

For airplanes with system software 0985.06 or earlier, use of VNAV is prohibited during the intermediate segment of an approach that includes a teardrop course reversal. VNAV will become 'Unavailable' at the

beginning of the teardrop segment of the course reversal. Use of VNAV is prohibited with course changes greater than 90°.

The barometric altimeter must be used as the primary altitude reference for all baro VNAV operations, including instrument approach procedure step-down fixes. Use of baro VNAV to a DA is not authorized with a remote altimeter setting. A current altimeter setting for the landing airport is required. When using remote altimeter minima, the baro VNAV function may be used to the published LNAV MDA.

When a flight is predicated on flying a RNP approach with an RF leg at the destination and/or alternate, the pilot must determine that the AFCS is operational. At a minimum, the flight director must be displayed and utilized when conducting procedures containing Radius-to-Fix (RF) segments.

For airplanes with 0985.07 system software, Vector-to-Final transitions are prohibited for the following approaches:

- CYSB VOR/DME Rwy 12
- NZTH GPS 330
- TTPP ILS Rwy 10

Use of VNAV is prohibited with course changes greater than 90°.

The fuel quantity, fuel required, fuel remaining, and gross weight estimate functions of the G1000 are supplemental information only and must be verified by the flight crew.

Do not use SafeTaxi or Chartview functions as the basis for ground maneuvering. SafeTaxi and Chartview functions do not comply with the requirements of AC 20-159 and are not qualified to be used as an airport moving map display (AMMD). SafeTaxi and Chartview are to be used by the flight crew to orient themselves on the airport surface to improve pilot situational awareness during ground operations.

The use of the colors red and amber within the checklist function has not been evaluated or approved by this STC. Use of the colors red and/or amber within user created checklists may require separate evaluation and approval by the FAA

G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM LIMITATIONS

NOTE

Limitations are in bolded text for this section only

The flight crew must confirm at system initialization that the Navigation database is current.

The Navigation database is expected to be current for the duration of the flight. **If the AIRAC cycle will change during flight, the flight crew must ensure the accuracy of navigation data, including suitability of navigation facilities used to define the routes and procedures for flight. If an amended chart affecting navigation data is published for the procedure, the database must not be used to conduct the procedure.**

GPS/SBAS based IFR enroute, oceanic, and terminal navigation is prohibited unless the flight crew verifies and uses a valid, compatible, and current Navigation database or verifies each waypoint for accuracy by reference to current approved data.

Discrepancies that invalidate a procedure must be reported to Garmin International. **The affected procedure is prohibited from being flown using data from the Navigation database until a new Navigation database is installed in the aircraft and verified that the discrepancy has been corrected.** Navigation database discrepancies can be reported at FlyGarmin.com then select "Aviation Data Error Report". Flight crew and operators can view Navigation data base alerts at FlyGarmin.com then select "NavData Alerts".

For flight planning purposes, in areas where SBAS coverage is not available, the flight crew must check RAIM availability. Within the United States, RAIM availability can be determined via the following:

- Using G1000 WFDE Prediction program, part number 006-A0154-01 (010-G1000-00) or later approved version with GARMIN GA36 and GA37 antennas selected.
- Via the FAA's en route and terminal RAIM prediction website: www.raimprediction.net.
- Contacting a Flight Service Station (not DUATS) to obtain non-precision approach RAIM.

Within Europe, RAIM availability can be determined using the G1000 WFDE Prediction program or Europe's AUGER GPS RAIM Prediction Tool at http://augur.ecacnav.com/augur/app/home. For other areas, use the G1000 WFDE Prediction program. This requirement is not necessary if SBAS coverage is confirmed to be available along the entire route of flight. The route planning and WFDE prediction program may be downloaded from the GARMIN G1000 website on the internet. For information on using the WFDE Prediction Program, refer to GARMIN WAAS FDE Prediction Program, part number 190-00643-01, 'WFDE Prediction Program Instructions'.

For flight planning purposes, operations within the U.S. National Airspace System on RNP and RNAV procedures when SBAS signals are not available, the availability of GPS integrity RAIM shall be confirmed for the intended route of flight. In the event of a predicted continuous loss of RAIM of more than five minutes for any part of the intended route of flight, the flight should be delayed, canceled, or re-routed on a track where RAIM requirements can be met.

For flight planning purposes for operations within European B-RNAV and P-RNAV airspace, if more than one satellite is scheduled to be out of service, then the availability of GPS integrity RAIM shall be confirmed for the intended flight (route and time). In the event of a predicted continuous loss of RAIM of more than five minutes for any part of the intended flight, the flight should be delayed, canceled, or re-routed on a track where RAIM requirements can be met.

For flight planning purposes, operations where the route requires Class II navigation the aircraft's operator or flight crew must use the Garmin WFDE Prediction program to demonstrate that there are no outages on the specified route that would prevent the G1000 from providing primary means of Class II navigation in oceanic and remote areas of operation that requires (RNP-10 or RNP-4) capability. If the Garmin WFDE Prediction program indicates fault exclusion (FDE) is unavailable for more than 34 minutes in accordance with FAA Order 8400.12C for RNP-10 requirements, or 25 minutes in accordance with FAA Order 8400.33 for RNP-4 requirements, then the operation must be rescheduled when FDE is available.

Both GIA 63W GPS/SBAS receivers must be operating and providing GPS navigation guidance to their respective PFD for operations requiring RNP-4 performance.

North Atlantic (NAT) Minimum Navigational Performance Specifications (MNPS) Airspace operations per AC 91-49 and AC 120-33 require both GIA 63W GPS/SBAS receivers to be operating and receiving usable signals except for routes requiring only one Long Range Navigation sensor. Each display computes an independent navigation solution based on the on-side GPS sensor. However, either display will automatically revert to the cross-side sensor if the on-side sensor fails or if the cross-side sensor is determined to be more accurate. A "BOTH ON GPS1" or "BOTH ON GPS2" message does not necessarily mean that one GPS has failed. Refer to the MFD AUX-GPS STATUS page to determine the state of the unused GPS.

Manual entry of waypoints using latitude/longitude or place/bearing is prohibited. Whenever possible, RNP and RNAV routes including Standard Instrument Departures (SIDs) and Obstacle Departure Procedures (ODPs), Standard Terminal Arrival (STAR), and en route RNAV "Q" and RNAV "T" routes should be loaded into the flight plan from the database in their entirety, rather than loading route waypoints from the database into the flight plan individually. Selecting and inserting individual named fixes from the database is permitted, provided all fixes along the published route to be flown are inserted.

"GPS", "or GPS", "RNAV(GPS)", or "RNAV(GNSS)" instrument approaches using the G1000 System are prohibited unless the flight crew verifies and uses the current Navigation database. GPS based instrument approaches must be flown in accordance with an approved instrument approach procedure that is loaded from the Navigation database.

Not all published Instrument Approach Procedures (IAP) are in the Navigation database. **Flight crew planning on flying an RNAV instrument approach must ensure that the Navigation database contains the planned RNAV Instrument Approach Procedure and that approach procedure must be loaded from the Navigation database into the FMS flight plan by its name.**

IFR non-precision approach approval using the GPS/SBAS sensor is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.

When operating under instrument flight rules, flight plan selection of any required alternate airport may be based on an RNAV approach. For airplanes with system software 0985.06 or earlier, alternate airport selection must be based upon an LNAV approach or an available ground-based approach for which the aircraft is equipped to fly.

For airplanes that have system software 0985.07 or later installed, alternate airport selection may based upon LNAV, LNAV/VNAV (when baro-VNAV is used), or other available ground-based approaches for which the aircraft is equipped to fly. Alternate planning may include the use of an LNAV MDA(h) for circling or LNAV/VNAV DA(h) when baro-VNAV is active.

The navigation equipment required to join and fly an instrument approach procedure is indicated by the title of the procedure and notes on the IAP chart. **Use of the GARMIN G1000 GPS/SBAS receivers to provide navigation guidance during the final approach segment of an ILS, LOC, LOC-BC, LDA, SDF, MLS or any other type of approach not approved for "or GPS" navigation is prohibited.**

When using the G1000 VOR/LOC/GS receivers to fly the final approach segment, VOR/LOC/GS navigation data is must be selected and presented on the CDI of the pilot flying.

For airplanes that have system software 0985.07 or later installed, all VNAV altitude constraints must be manually entered by the flight crew. The system will not auto-nominate VNAV altitude constraints.

Navigation information is referenced to WGS-84 reference system, and should only be used where the Aeronautical Information Publication (including electronic data and aeronautical charts) conform to WGS-84 or equivalent.

AHRS AREAS OF OPERATION

For airplanes that have GRS 77 AHRS installed:

Flight operations with the G1000 Integrated Avionics installed are prohibited in the following regions due to unsuitability of the magnetic fields near the Earth's poles:

1. North of 72° North latitude at all longitudes
2. South of 70° South latitude at all longitudes
3. North of 65° North latitude between longitude 75° W and 120° W (Northern Canada)
4. North of 70° North latitude between longitude 70° W and 128° W (Northern Canada)
5. North of 70° North latitude between longitude 85° E and 114° E (Northern Russia)
6. South of 55° South latitude between longitude 120° E and 165° E (Region south of Australia and New Zealand)

NOTE

The Garmin G1000 system is not designed for use as a polar navigator and operation outside the approved operating area is prohibited. The GRS-77 AHRS internally monitors the magnetic field and will display a GEO LIMITS system message when the magnetic field becomes unsuitable for AHRS operation. When the AHRS can no longer reliably compute heading, heading information will be removed from the HSI.

For airplanes that have GRS 7800 AHRS installed:

Flight operations with the G1000 Integrated Avionics installed are prohibited in the following regions due to unsuitability of the magnetic fields near the Earth's poles:

1. North of 84° North latitude at all longitudes
2. South of 70° South latitude at all longitudes
3. South of 55° South latitude between longitude 120° E and 165° E (Region south of Australia and New Zealand)

NOTE

The Garmin G1000 system is not designed for use as a polar navigator and operation outside the approved operating area is prohibited.

AUTOPILOT OPERATION LIMITS

One pilot must remain seated at the controls, with seatbelt fastened, during all autopilot operations.

Do not use autopilot or yaw damper during takeoff and landing.

The GFC 700 AFCS preflight test must complete successfully prior to use of the autopilot, flight director or manual electric trim.

The maximum fuel imbalance with the autopilot engaged is 300 pounds.

Minimum speed for autopilot operation is 100 KIAS.

Maximum speed limit for autopilot operation is unchanged from the airplane's maximum airspeed limit (V_{MO}/M_{MO}).

Autopilot coupled ILS, LOC, LP/LPV, or LNAV/VNAV approaches with the yaw damper inoperative or not engaged is prohibited.

The autopilot must be in ROL mode while switching between MAGNETIC and TRUE navigation angles.

For airplanes that have GRS 7800 AHRS installed, the autopilot must be in ROL mode while switching between AHRS DG FREE and DG SLAVE Modes.

Do not use autopilot below the following altitudes:

1. On takeoff, do not engage the autopilot below ..... 400 feet AGL
2. Cruise ..... 1000 feet AGL
3. Approach (GP or GS mode) ..... 200 feet AGL
4. Approach (FLC, VS, PIT or ALT mode) ..... Higher of 400 feet AGL or Approach MDA

SYNTHETIC VISION AND PATHWAYS LIMITS

Use of the Synthetic Vision system display elements alone for aircraft control without reference to the G1000 primary flight instruments or the aircraft standby instruments is prohibited.

Use of the Synthetic Vision system alone for navigation, or obstacle or terrain avoidance is prohibited.

Use of the SVS traffic display alone to avoid other aircraft is prohibited.

For airplanes that have GRS 7800 AHRS installed, use of the Synthetic Vision System is prohibited while operating in DG FREE mode.

TAWS, GPWS, AND TERRAIN SYSTEM LIMITS

Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with TAWS or GPWS warnings.

The TAWS databases have an area of coverage as detailed below:

a) The terrain database has an area of coverage from North 90° Latitude to South 90° Latitude in all Longitudes.

b) The obstacle database has an area of coverage that includes the United States and Europe.

Use of the TAWS for navigation or terrain and/or obstacle avoidance is prohibited.

NOTE

The area of coverage may be modified, as additional terrain data sources become available.

NOTE

The TAWS page and terrain display is intended to serve as a situational awareness tool only. It may not provide the accuracy, fidelity, or both, on which to solely base decisions and plan maneuvers to avoid terrain or obstacles.

To avoid unwanted alerts, TAWS and/or GPWS should be inhibited when landing at an airport that is not included in the airport database.

Garmin International holds an FAA Type 2 Letter of Acceptance (LOA) in accordance with AC 20-153 for database integrity, quality, and database management practices for the Terrain and Obstacle databases. Flight crews and operators can view the LOA statuses and areas of degraded terrain performance by selecting the Type 2 LOA status quick link at www.FlyGarmin.com.

When responding to a TAWS “Pull Up” warning, the autopilot must be immediately disconnected and the evasive maneuver hand flown by the pilot.

TRAFFIC AVOIDANCE SYSTEM LIMITS

Use of the MAP - TRAFFIC MAP, Inset Map traffic display, or the SVS display to maneuver the airplane for traffic avoidance without outside visual reference is prohibited. The Traffic Information System (TIS) or optional Skywatch TAS, Skywatch HP, Honeywell KTA-870, and Garmin GTS 820/850/8000 Traffic Systems are intended as an aid for the pilot to visually locate traffic. It is the responsibility of the pilot to see and manually maneuver the airplane to avoid other traffic.

Maneuvers based solely on a traffic advisory (TA) or on information displayed on a traffic display are not authorized. Pilots are authorized to deviate from their current ATC clearance to comply with a TCAS II resolution advisory (RA). When responding to a TCAS RA warning, the autopilot must be immediately disconnected and the evasive maneuver hand flown by the pilot.

DATALINK WEATHER (XM OR CONNEXT WEATHER)

Datalink weather information displayed by the G1000 system is limited to supplemental use only. XM or Garmin Connext weather data is not a source of official weather information. Use of the NEXRAD, PRECIP, XM LTNG and DL LTNG (Datalink Lightning) data on the MAP – NAVIGATION MAP, MAP – WEATHER DATA LINK (XM) or MAP – WEATHER DATA LINK (CNXT) pages for hazardous weather, e.g., thunderstorm penetration is prohibited.

NEXRAD, PRECIP, XM LTNG and DL LTNG information on the MAP – NAVIGATION MAP, MAP – WEATHER DATA LINK (XM), or MAP – WEATHER DATA LINK (CNXT) pages is intended only as an aid to enhance situational awareness of hazardous weather, not penetration. It is the pilot's responsibility to avoid hazardous weather using official weather data sources and the airplane's in-flight weather radar.

NEXRAD, PRECIP, XM LTNG and DL LTNG information on the MAP – NAVIGATION, MAP – XM WEATHER DATA LINK, or MAP – GFDS WEATHER DATA LINK pages is intended only as an aid to enhance situational awareness of hazardous weather, not penetration. It is the pilot's responsibility to avoid hazardous weather using official weather data sources and the airplane's in-flight weather radar.

OPTIONAL L3 COMMUNICATIONS AVIONICS SYSTEM WX-500 STORMSCOPE

Stormscope lightning information displayed by the G1000 system is limited to supplemental use only. The use of the Stormscope lightning data on the MAP – NAVIGATION MAP and/or MAP – STORMSCOPE page for hazardous weather (thunderstorm) penetration is prohibited. Stormscope lightning data on the MAP - NAVIGATION MAP or MAP – STORMSCOPE page is intended only as an aid to enhance situational awareness of hazardous weather, not penetration. It is the pilot's responsibility to avoid hazardous weather using official weather data sources and the airplane's weather radar.

PLACARDS

On Instrument Panel above the Standby Attitude Indicator:

STANDBY ALT/AS	
ALTITUDE – FEET	V_{MO}-KIAS
S.L TO 21,000	259
21,000 TO 25,000	239
25,000 TO 30,000	214
ABOVE 30,000	191

KINDS OF OPERATION LIMITS

The Hawker Beechcraft King Air 300 is approved for the following types of operations when the required equipment, as shown in the airplane AFM/POH Kinds of Operations Equipment List, supplemented by the Kinds of Operations Equipment List from other applicable Airplane Flight Manual Supplements, and the Kinds of Operations Equipment List contained in this Airplane Flight Manual Supplement, is installed and operable.

1. VFR Day
2. VFR Night
3. IFR Day
4. IFR Night
5. Icing Conditions

KINDS OF OPERATIONS EQUIPMENT LIST

This airplane may be operated in day or night VFR, day or night IFR, and icing conditions when the required systems and equipment are installed and operable.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. The system and equipment listed must be installed and operable for the particular kind of operation indicated unless:

The airplane is approved to be operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA.

Or:

An alternate procedure is provided in the Pilots Operating Handbook and FAA Approved Flight Manual for the inoperative state of the listed system or equipment and all limitations are complied with.

Numbers in the Kinds of Operations Equipment List refer to quantities required to be operative for the specified condition. The list does not include all equipment that may be required by specific operating rules. It also does not include components obviously required for the airplane to be airworthy such as wings, empennage, engines, etc.

System and/or Equipment	VFR Day	VFR Night	IFR Day	IFR Night	Icing Conditions	Remarks and/or Exceptions
ELECTRICAL POWER						
Inverter	**0**	**0**	**0**	**0**	**0**	**Removed by G1000 modification**
INVERTER Annunciator	**0**	**0**	**0**	**0**	**0**	**Removed by G1000 modification**
Standby Battery	**0**	**1**	**1**	**1**	**1**	
ENGINE INDICATIONS **No Changes - Refer to Aircraft Flight Manual**						
ENGINE OIL **No Changes - Refer to Aircraft Flight Manual**						
ENVIRONMENTAL **No Changes – Refer to Aircraft Flight Manual**						
EQUIPMENT/FURNISHINGS **No Changes – Refer to Aircraft Flight Manual**						
FIRE PROTECTION **No Changes – Refer to Aircraft Flight Manual**						
FLIGHT CONTROLS **No Changes - Refer to Aircraft Flight Manual**						
FUEL **No Changes - Refer to Aircraft Flight Manual**						
ICE AND RAIN PROTECTION **No Changes - Refer to Aircraft Flight Manual**						
LANDING GEAR **No Changes - Refer to Aircraft Flight Manual**						
LIGHTS **No Changes - Refer to Aircraft Flight Manual**						
MISCELLANEOUS EQUIPMENT (Single Pilot Operation Only) **No Changes – Refer to Aircraft Flight Manual**						

System and/or Equipment	VFR Day	VFR Night	IFR Day	IFR Night	Icing Conditions	Remarks and/or Exceptions
NAVIGATION INSTRUMENTS						
Magnetic Compass	**1**	**1**	**1**	**1**	**1**	
Outside Air Temperature	**1**	**1**	**1**	**1**	**1**	
G1000 Integrated Avionics						
GARMIN G1000 Cockpit Reference Guide	**1**	**1**	**1**	**1**	**1**	**Required only for operations in RVSM airspace.**
Autopilot	**0**	**0**	**1**	**1**	**0**	**A flight director is required at all times when conducting procedures containing Radius-to-Fix (RF) segments.**
Electronic Stability & Protection (ESP)	**0**	**0**	**0**	**0**	**0**	
Yaw Damper/Rudder Boost System	**1**	**1**	**1**	**1**	**1**	**Yaw damper is required for flight above a certain altitude. Refer to Aircraft's POH or AFMS for any installed modifications that affect this requirement. Rudder Boost is required for all flights.**
Control Wheel Autopilot Disconnect/Trim Interrupt Switches	**1**	**1**	**1**	**1**	**1**	**Left side is required. Both sides required for two-crew operation.**
VHF Communications System	**0**	**0**	**1**	**1**	**1**	**Or as required by operating regulation.**
Audio Control Panel	**1**	**1**	**1**	**1**	**1**	**Pilot's audio panel required for single pilot operation. Both sides required for two-crew operation.**
Primary Flight Display	**2**	**2**	**2**	**2**	**2**	
Multi Function Display	**1**	**1**	**1**	**1**	**1**	
Air Data Computer	**2**	**2**	**2**	**2**	**2**	
Attitude/Heading Reference System (AHRS)	**2**	**2**	**2**	**2**	**2**	
Standby Attitude Indicator	**0**	**0**	**1**	**1**	**1**	
Standby Altimeter	**1**	**1**	**1**	**1**	**1**	
Standby Airspeed Indicator	**1**	**1**	**1**	**1**	**1**	
ATC Transponder	**0**	**0**	**1**	**1**	**1**	**Required for RVSM operations, or as required by operating regulation.**
VHF Navigation Receiver	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
GPS/SBAS Receiver	**1**	**1**	**2**	**2**	**2**	**Or as required by operating regulation.**
Automatic Direction Finder (ADF)	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Distance Measuring Equipment (DME)	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**

System and/or Equipment	VFR Day	VFR Night	IFR Day	IFR Night	Icing Conditions	Remarks and/or Exceptions
Radar (Radio) Altimeter	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Marker Beacon Receiver	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Traffic Collision Avoidance System (TCAS I or II)	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Terrain Awareness and Warning System (TAWS)	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Ground Proximity Warning System (GPWS)	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
Weather Radar	**0**	**0**	**0**	**0**	**0**	**Or as required by operating regulation.**
XM or Connext Datalink Weather	**0**	**0**	**0**	**0**	**0**	
GSR 56 Satellite Receiver	**0**	**0**	**0**	**0**	**0**	
GDU Cooling Fans (3 total)	**2**	**2**	**2**	**2**	**2**	**For aircraft with G1000 systems installed per Garmin drawing 005-00629-00 Revision 6 or previous and <u>not</u> modified by Garmin service bulletin No. 1375, all fans are required if OAT is above 41°C (106°F) and cabin air conditioning is inoperative.**
GIA Cooling Fans (2 total)	**0**	**0**	**0**	**0**	**0**	**For aircraft with G1000 systems installed per Garmin drawing 005-00629-00 Revision 6 or previous and <u>not</u> modified by Garmin service bulletin No. 1375, both fans are required if OAT is above 42°C (107°F).**
RNAV Operations Equipment and Components						**Equipment and components required for RNAV 2, RNAV 1, B-RNAV/RNAV 5, P-RNAV, Class II navigation, RNP and RNAV routes including Standard Instrument Departures (SIDs) and Obstacle Departure Procedures (ODPs), Standard Terminal Arrival Routes (STARs), and enroute RNAV "q" and RNAV "T" routes, and "GPS", "or GPS", "RNAV (GPS)", and RNAV (GNSS) Instrument approach operations**
GPS/SBAS receiver with GPS Software 3.2 or later approved version **Note 1, 2	**1**	**1**	**2**	**2**	**2**	
GDU 104X Display (PFD)	**2**	**2**	**2**	**2**	**2**	
GDU 1500 Display (MFD)	**1**	**1**	**1**	**1**	**1**	
GA36 antenna	**1**	**1**	**1**	**1**	**1**	
GA37 antenna	**1**	**1**	**1**	**1**	**1**	**NOTE 1: Some approaches require two functioning GPS/SBAS receivers.** **NOTE 2: If only one is required, and only one is operative, it must be #1.**
OXYGEN **No Changes - Refer to Aircraft Flight Manual**						

System and/or Equipment	VFR Day	VFR Night	IFR Day	IFR Night	Icing Conditions	Remarks and/or Exceptions
PROPELLER						
No Changes -						**Refer to Aircraft's POH or AFMS for any installed modifications**
VACUUM SYSTEM						
Gyro Suction Gage	**0**	**0**	**0**	**0**	**1**	
Instrument Air System	**0**	**0**	**0**	**0**	**1**	

Section 3 - Emergency Procedures

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Bolded checklist steps in the EMERGENCY PROCEDURES section indicate pilot memory action items. The pilot shall perform these items without reference to the checklist in this section.

AUTOMATIC FLIGHT CONTROL SYSTEM

AUTOPILOT MALFUNCTION / PITCH TRIM RUNAWAY

These procedures supersede the airplane's UNSCHEDULED ELECTRIC ELEVATOR TRIM ACTIVATION AFM checklist items.

If the airplane deviates unexpectedly from the planned flight path:

1. **Control Wheel ..... GRIP FIRMLY**

2. **AP/YD DISC / TRIM INTRPT Button..... PRESS AND HOLD**
   (Be prepared for high elevator control forces)

3. **Aircraft Attitude ..... MAINTAIN/REGAIN AIRCRAFT CONTROL**
   use standby attitude indicator if necessary

NOTE

Do not release the AP/YD DISC / TRIM INTRPT Button until after pulling the AFCS SERVOS Circuit Breaker. The rudder boost will also be interrupted when the disconnect button is depressed.

4. Elevator Trim ..... RE-TRIM if necessary using Elevator Tab Wheel

5. AFCS SERVOS Circuit Breaker ..... PULL
   (Right circuit breaker panel)

NOTE

Pulling the AFCS SERVOS circuit breaker will render the autopilot, yaw damper and rudder boost systems inoperative.

6. AP/YD DISC / TRIM INTRPT Button ..... RELEASE

WARNING

IN FLIGHT, DO NOT OVERPOWER THE AUTOPILOT. THE TRIM WILL OPERATE IN THE DIRECTION OPPOSING THE OVERPOWER FORCE, WHICH WILL RESULT IN LARGE OUT-OF-TRIM FORCES.

DO NOT ATTEMPT TO RE-ENGAGE THE AUTOPILOT OR USE MANUAL ELECTRIC PITCH TRIM UNTIL THE CAUSE OF THE MALFUNCTION HAS BEEN CORRECTED.

NOTE

The maximum altitude lost during malfunction tests was:

Cruise – 230 Feet
Descent – 555 Feet
Maneuvering – 170 Feet
Glideslope/Glidepath Approach – 79 Feet
Non-Precision Approach – 100 Feet

UNSCHEDULED RUDDER BOOST ACTIVATION

These procedures supersede the airplane's UNSCHEDULED RUDDER BOOST ACTIVATION AFM checklist items.

Rudder boost operation without a large variation of power between the engines indicates a failure of the system.

1. **AP/YD DISC / TRIM INTRPT Button ..... PRESS AND HOLD**
2. **Rudder Boost ..... OFF**

If Condition Persists:

3. **AFCS SERVOS Circuit Breaker ..... PULL, or**
4. **Either Bleed Valve ..... PNEU & ENVIR OFF**
5. Perform Normal Landing

NOTE

Pulling the AFCS SERVOS circuit breaker will render the autopilot, yaw damper and rudder boost systems inoperative.

MANUAL AUTOPILOT DISCONNECT

If necessary, the autopilot may be manually disconnected using any one of the following methods.

1. AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE
   (Pilot's or Copilot's control wheel)

2. AP Button (Autopilot mode control panel)..... PRESS
   (Yaw damper remains engaged)

3. Pitch Trim Switch (Pilot's or, if installed, Copilot's control wheel)..... ACTIVATE
   (Yaw damper remains engaged)

4. Go-Around (GA) switch (For airplanes without ESP Installed) ..... PRESS
   (Left power lever - yaw damper remains engaged)

5. AFCS SERVOS Circuit Breaker..... PULL
   (Right circuit breaker panel)

AUTOPILOT ABNORMAL DISCONNECT

(Red 'AP' flashing on PFD, Continuous high-low aural tone)

1. A/P DISC/TRIM INTRPT Button .....PRESS AND RELEASE
   (to cancel disconnect tone)

2. Aircraft Attitude..... MAINTAIN/REGAIN AIRCRAFT CONTROL

NOTE

The autopilot disconnect may be accompanied by a red boxed PTCH (pitch), ROLL, YAW or AFCS on the PFD, indicating the axis which has failed, or that the automatic flight control system has failed. The autopilot cannot be re-engaged with any of these annunciations present.

AUTOPILOT FAILURE

(Red

annunciator on PFD, Red 'AP' flashing on PFD, Continuous high-low aural tone)

1. AP/YD DISC / TRIM INTRPT Button ..... PRESS
   (to cancel disconnect tone)

   If red 'AFCS' is displayed, the autopilot, yaw damper, and manual electric pitch trim will be inoperative.

2. Advise ATC of loss of autopilot system.

NOTE

A loss of the autopilot may also cause yaw damper and rudder boost to be inoperative. Many King Air 300 aircraft require the yaw damper to be operative above 11,000 feet MSL, and rudder boost continuously. Refer to the Limitations section of the Aircraft Flight Manual, or appropriate Airplane Flight Manual Supplement for further information.

3. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

4. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

PITCH AXIS FAILURE

(Red PTCH annunciator on PFD)

1. Indicates a failure of the pitch axis of the autopilot. The autopilot will be inoperative. The yaw damper will be operative.

NOTE

If the red PTCH annunciator illuminates without the autopilot engaged, it may indicate a faulted AHRS. Monitor both PFDs and the standby attitude indicator for abnormal attitude indications.

2. Advise ATC of loss of autopilot system.
3. Yaw Damper .....ENGAGE AS REQUIRED
4. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

5. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

ROLL AXIS FAILURE

(Red ROLL annunciator on PFD)

1. Indicates a failure of the roll axis of the autopilot. The autopilot will be inoperative. The yaw damper will be operative.

NOTE

If the red ROLL annunciator illuminates without the autopilot engaged, it may indicate a faulted AHRS. Monitor both PFDs and the standby attitude indicator for abnormal attitude indications.

2. Advise ATC of loss of autopilot system.
3. Yaw Damper .....ENGAGE AS REQUIRED
4. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

5. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

PITCH TRIM FAILURE

(Red PTRM annunciator on PFD)

1. Indicates a failure of the pitch trim servo of the autopilot. The autopilot will be inoperative. The yaw damper will remain operative.

2. Control Wheel ..... GRIP FIRMLY

3. AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE
   (Be prepared for high elevator control forces)

4. Elevator Trim ..... AS REQUIRED USING ELEVATOR TAB WHEEL

If Red PTRM *Message Clears*

5. Autopilot ..... RE-ENGAGE

If Red PTRM *Message Remains*

5. Autopilot ..... DO NOT RE-ENGAGE

6. Elevator Trim ..... CONTINUE TO USE ELEVATOR TAB WHEEL

7. Yaw Damper .....ENGAGE AS REQUIRED

In RVSM Airspace:

8. Advise ATC of loss of autopilot system.
9. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

10. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

AUTOPILOT PRE-FLIGHT TEST FAIL

(Red PFT annunciator on PFD)

1. Indicates the AFCS system failed the automatic Pre-Flight test. The autopilot, yaw damper and electric elevator trim are inoperative, and the rudder boost system may be inoperative. The Flight Director may still function.

AUTOPILOT OVERSPEED RECOVERY

(Amber MAXSPD annunciation on PFD)

1. **Power Levers.....REDUCE**

When overspeed condition is corrected:

2. Autopilot .....RESELECT VERTICAL MODE (if necessary)

NOTE

Overspeed recovery mode provides a pitch up command to decelerate the airplane at or below the maximum autopilot operating speed (259 KIAS / 0.58 M) or V_{FE} (200 or 157 KIAS) if the flaps are extended. Overspeed recovery is not active in altitude hold (ALT), glideslope (GS), or glidepath (GP) modes.

AUTOPILOT UNDERSPEED PROTECTION ACTIVATION AND RECOVERY (ESP-Equipped Aircraft Only)

(Red UNDERSPEED PROTECT ACTIVE Warning Annunciator on the PFDs on ESP-equipped aircraft. May also be accompanied by an amber MINSPD annunciator above the airspeed tape display and aural "AIRSPEED" alert)

1. **Power Levers..... INCREASE POWER AS REQUIRED TO CORRECT UNDERSPEED**

2. **Aircraft Attitude and Altitude.....MONITOR**

After underspeed condition is corrected:

3. Autopilot .....RESELECT VERTICAL AND LATERAL MODES (if necessary)

4. Power Levers .....ADJUST AS NECESSARY

NOTE

Autopilot Underspeed Protection Mode provides a pitch down command to maintain 100 +/-2 KIAS, or 2 KIAS above stall warning airspeed, depending on the vertical mode selected. Underspeed recovery is not available below 200 feet AGL, except in go-around (GA) mode.

ENGINE FAILURE

ENGINE FIRE OR FAILURE IN FLIGHT

1. **AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE**
2. **Engine Fire or Failure in Flight Procedure in EMERGENCY PROCEDURES Section of AFM ..... COMPLETE**
3. Trim Tabs .....MANUALLY ADJUST ELEVATOR, AILERON, AND RUDDER TABS
4. Autopilot .....PRESS 'AP' BUTTON (if desired) to RE-ENGAGE
5. Rudder Tab .....MANUALLY ADJUST AS REQUIRED AFTER POWER AND CONFIGURATION CHANGES
6. TCAS II (IF INSTALLED) .....SELECT TA ONLY

ELECTRICAL SYSTEM

DUAL GENERATOR FAILURE [L DC GEN] [R DC GEN]

This procedure should be performed prior to completing the respective section of the AFM checklist.

If Neither Generator Will Reset:

1. Standby Battery Switch ..... INDICATES ARM or ON
2. The following equipment will be functional while the G1000 is powered from the aircraft's battery power, Avionics Master Power Switch is ON, and the [L GEN TIE OPEN], [R GEN TIE OPEN], [L DC GEN] and [R DC GEN] annunciators are illuminated.

   Pilot's Attitude, Heading, Air Data, and Nav CDI
   Copilot's Attitude, Heading, Air Data, and Nav CDI
   MFD, Engine Gauges
   Com 1, Pilot's Audio Panel, GPS 1, GPS 2, VHF Nav 1, VHF Nav 2, Transponder 1
   Autopilot, Flight Director, Yaw Damper/Rudder Boost

NOTE

Inoperative G1000 equipment items will be displayed in the ALERTS window on both PFDs.

NOTE

The aircraft's battery will continue to power the G1000 equipment for at least 30 minutes following complete loss of normal electrical power generation. Once the aircraft's battery can no longer power the G1000, the standby battery will automatically power the standby attitude indicator, altimeter vibrator, the instrument emergency lights, and the internal lighting of the three standby instruments and magnetic compass for an additional 30 minutes.

NOTE

The Copilot and Standby Altimeter and Airspeed indicators may be unreliable in visible moisture because the Right Pitot Heat is not powered by the aircraft battery. The Left Pitot Heat remains powered by the battery via the aircraft's Triple Fed Bus.

LOAD MANAGEMENT TABLE

This table replaces the Load Management Table published in the AFM. Use of the following equipment will reduce battery duration by the approximate times listed below. Multiple usage of the following equipment is additive.

EQUIPMENT	OPERATING TIME (Minutes)	REDUCTION IN MAIN BATTERY DURATION (Minutes)
Standby Altimeter	Continuous	None*
Standby Airspeed Indicator	Continuous	None*
Standby Attitude Indicator	Continuous	None*
Comm 1 Xmit	Continuous	-----
Pilot Audio	Continuous	-----
Nav 1	Continuous	-----
ADC 1	Continuous	-----
Pilot PFD	Continuous	-----
AHRS 1	Continuous	-----
Transponder 1	Continuous	-----
GEA 1	Continuous	-----
MFD	Continuous	-----
Copilot PFD	Continuous	-----
Nav 2	Continuous	-----
ADC 2	Continuous	-----
AHRS 2	Continuous	-----
GEA 2	Continuous	-----
Instrument Indirect /Emergency Lights	Continuous	None*
Cabin Lights	5	3
Ice Lights	5	0.6
NAV Lights	60	7
Taxi Lights	5	2
Digital OAT	Continuous	-----
Single Standby Fuel Pump	5	2
Left Bleed Air Valve	Continuous	-----
Pressurization Control	Continuous	-----
Cabin Temperature Control	Continuous	-----
Surface Deice	1	0.1
Left and Right Main Engine Anti-ice	Single Operation	0.1
Manual Prop Deice	5	6
Windshield Wiper	5	1
Left Pitot Heat	Continuous	-----

*Powered by standby battery.

TAWS AND GPWS

TAWS OR GPWS WARNING

(Red PULL UP on PFD and aural “PULL UP” or “[Whoop, Whoop], PULL UP”

1. **AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE (To disconnect the autopilot)**
2. **Aircraft Attitude ..... PULL BACK ON CONTROL WHEEL**
3. **Power ..... MAXIMUM ALLOWABLE**
4. **Airspeed ..... BEST ANGLE OF CLIMB SPEED**

After Warning Ceases:

5. Power ..... MAXIMUM CONTINUOUS
6. Altitude ..... CLIMB AND MAINTAIN SAFE ALTITUDE
7. Advise ATC of Altitude Deviation, if appropriate.

NOTE

Only vertical maneuvers are recommended, unless either operating in visual meteorological conditions (VMC), or the pilot determines, based on all available information, that turning in addition to the escape maneuver is the safest course of action, or both.

TCAS II

Refer to the GARMIN Pilot’s Guide, P/N 190-01343-01 Rev. A or later FAA approved revision for a detailed description of the TCAS II display and control elements as implemented in the G1000.

The following procedure is for airplanes NOT equipped with the Garmin GTS 8000 TCAS II system, and should be performed in conjunction with the respective section of the TCAS-II AFMS checklist.

TCAS II RESOLUTION ADVISORY

(Red TRAFFIC and aural resolution advisory)

1. **Perform Resolution Advisory Procedures in the NORMAL PROCEDURES Section of the TCAS II AFMS.**
2. **Follow the green cues on the PFD VSI display as required to comply with the RA.**

Compliance with a TCAS II resolution advisory (RA) is necessary unless the pilot considers it unsafe to do so, or unless the pilot has information about the cause of the RA and can maintain safe separation for example visual acquisition of, and safe separation from, a nearby aircraft on a parallel approach.

The following procedure applies to airplanes that ARE equipped with the Garmin GTS 8000 TCAS II system.

TCAS II RESOLUTION ADVISORY (GTS 8000)

(Red TRAFFIC and aural resolution advisory)

If a Maneuver is Required:

1. **AP/YD DISC / TRIM INTRPT Button ..... PRESS AND RELEASE (To Disconnect the Autopilot)**
2. **Aircraft Attitude ..... PITCH AS REQUIRED TO COMPLY WITH THE RA, VERTICAL SPEED INDICATOR INSIDE THE GREEN BAND**
3. Power ..... AS REQUIRED

If a TCAS "CLIMB" RA Occurs When Configured for Landing:

1. Flaps ..... RETRACT
2. Gear ..... UP WITH POSITIVE RATE OF CLIMB

Compliance with a TCAS II resolution advisory (RA) is necessary unless the pilot considers it unsafe to do so, or unless the pilot has information about the cause of the RA and can maintain safe separation for example visual acquisition of, and safe separation from, a nearby aircraft on a parallel approach. The TA ONLY mode can be used to preclude unnecessary RA when intentionally operating near other aircraft.

Evasive maneuvering should be limited to the minimum required to comply with the RA. Excessive responses to RAs are not desirable or appropriate because of other potential traffic and ATC consequences. From level flight, proper response to an RA typically results in an overall altitude deviation of 300 to 500 feet in order to successfully resolve a traffic conflict.

CAUTION

Once a non-crossing RA has been issued, safe operation could be compromised if current vertical speed is changed, except as necessary to comply with the RA. This is because TCAS II-to-TCAS II coordination may be in progress with the intruder airplane, and any change in vertical speed that does not comply with the RA may negate the effectiveness of the other airplane's compliance with its RA.

WARNING

NONCOMPLIANCE WITH A CROSSING RA BY ONE AIRPLANE MAY RESULT IN REDUCED VERTICAL SEPARATION; THEREFORE, SAFE HORIZONTAL SEPARATION MUST ALSO BE ASSURED BY VISUAL MEANS.

CAUTION

It is possible in some cases to have insufficient airplane performance to follow the TCAS RA command without flying into stall warning or buffet. Therefore, stall warning must be respected when following an RA. Conditions where this may occur include but are not limited to:

- Bank angle in excess of 15 degrees.
- One engine inoperative.
- Speeds below normal operating speeds.
- Failure to configure for a go-around following a climb RA in landing configuration.
- Failure to advance thrust to full rating following reduced thrust takeoff.
- Abnormal configurations which reduce climb performance (ie, gear not retractable)
- TCAS command reversal to a "CLIMB – CLIMB NOW."
- Icing conditions affecting airplane performance.

CAUTION

Do not attempt to use the Flight Director to comply with TCAS II Resolution Advisories

WINDSHEAR ENCOUNTER

For airplanes equipped with Electronic Stability and Protection (ESP):

1. **AP/YD DISC / TRIM INTRPT Button ..... PRESS and HOLD (To prevent automatic autopilot engagement)**

2. **Perform established windshear escape procedures.**

After Exiting Windshear:

3. AP/YD DISC / TRIM INTRPT Button ..... RELEASE

4. Autopilot/Yaw Damper ..... AS DESIRED

NOTE

Refer to FAA Advisory Circular 00-54, Pilot Windshear Guide for additional information on windshear avoidance and escapement techniques.

ESP ENGAGEMENT

For airplanes equipped with Electronic Stability and Protection (ESP):

1. **Use the flight controls and power levers as required to correct the abnormal flight condition.**

NOTE

If the airplane remains within the ESP engagement envelope for more than approximately 10 seconds, the autopilot will automatically engage in LVL mode, and will be accompanied by an aural “ENGAGING AUTOPILOT” alert. Refer to Section 7 – Systems Description, “Electronic Stability & Protection” (ESP) for further information.

Section 3A - Abnormal Procedures

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AUTOMATIC FLIGHT CONTROL SYSTEM

AILERON MISTRIM (amber ←AIL or AIL→ annunciation on PFD)

Indicates a mistrim of the ailerons while the autopilot is engaged. The autopilot cannot trim the airplane in roll. During large changes in airspeed, engine failure, or single engine operation, illumination of this message may occur. If the autopilot is disconnected while this message is displayed, high roll forces are possible. The following procedure should be followed:

1. Control Wheel ..... GRIP FIRMLY

2. Aileron Tab Knob ..... ROTATE SLOWLY IN DIRECTION OF INDICATED MISTRIM UNTIL THE ANNUNCIATION EXTINGUISHES

If the annunciator stays extinguished and no other annunciations illuminate:

3. Continue to operate the autopilot in a normal manner after the annunciation extinguishes.

If the annunciator remains illuminated or reappears with no changes in airspeed or configuration from the previous trimmed condition:

3. Control Wheel ..... GRIP FIRMLY

4. Aileron Tab Knob ..... ROTATE SLOWLY IN THE DIRECTION OF INDICATED MISTRIM UNTIL ANNUNCIATION EXTINGUISHES

5. Cabin Sign..... NO SMOKE & FSB
   Ensure passengers are seated with seat belts securely fastened

6. AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE
   (Pilot's or Copilot's control wheel)

7. Aileron Trim..... USING AILERON TAB KNOB, MANUALLY RE-TRIM AIRPLANE

The autopilot should be considered inoperative until the cause of the mistrim has been investigated and corrected. Yaw damper may be re-engaged and used normally.

In RVSM Airspace and Autopilot Inoperative:

7. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

8. Advise ATC of loss of autopilot system. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

ELECTRIC PITCH TRIM INOPERATIVE

NOTE

This condition may be accompanied by a red AFCS or PTRM annunciation on the PFDs.

1. Move both halves of pilot and copilot pitch trim switches to check for stuck switch.

2. AFCS SERVOS Circuit Breaker ..... PULL and RESET
(Right circuit breaker panel)

The autopilot will enter Pre-Flight Test (PFT) mode when the AFCS SERVOS circuit breaker is reset. If the autopilot successfully completes the Pre-Flight Test, re-engage the autopilot, reselect the desired autopilot modes, and continue to use normally. If the Pre-Flight Test fails, indicated by a red PFT on the PFDs, the autopilot, yaw damper, and electric pitch trim will be inoperative for the remainder of the flight.

If Operative:

3. Use as required.

If still inoperative:

3. Pitch Trim ..... MANUALLY TRIM AIRPLANE IN PITCH
(Using Elevator Tab Wheel)

NOTE

The autopilot, yaw damper and rudder boost may also be inoperative. Many King Air 300 aircraft require the yaw damper to be operative above 11,000 feet MSL, and rudder boost continuously. Refer to the Limitations section of the Aircraft Flight Manual, or appropriate Airplane Flight Manual Supplement for further information.

In RVSM Airspace and Autopilot Inoperative:

4. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

5. Advise ATC of loss of the autopilot system. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

ELEVATOR MISTRIM (amber ↓ELE or ↑ELE annunciation on PFD)

Indicates a mistrim of the elevator tab while the autopilot is engaged. The autopilot will normally trim the airplane as required. However, during rapid acceleration, deceleration, or configuration changes, momentary illumination of this message may occur accompanied by minor fluctuations in flight path. If the autopilot is disconnected while this message is displayed, high elevator control forces are possible. In the event of sustained illumination, the following procedure should be followed:

1. Control Wheel ..... GRIP FIRMLY

2. Elevator Tab Wheel..... ROTATE SLOWLY IN THE DIRECTION OF INDICATED MISTRIM UNTIL ANNUNCIATION EXTINGUISHES

If the annunciator stays extinguished and no other annunciations illuminate:

3. Continue to operate the autopilot in a normal manner after the annunciation extinguishes.

If the annunciator remains illuminated or reappears with no changes in airspeed or configuration from the previous trimmed condition:

3. Control Wheel ..... GRIP FIRMLY

4. Elevator Tab Wheel..... ROTATE SLOWLY IN THE DIRECTION OF INDICATED MISTRIM UNTIL ANNUNCIATION EXTINGUISHES

5. Cabin Sign..... NO SMOKE & FSB
   Ensure passengers are seated with seat belts securely fastened

6. AP/YD DISC / TRIM INTRPT Button ..... PRESS and RELEASE
   (Pilot's or Copilot's control wheel)

7. Pitch Trim ..... USING ELEVATOR TAB WHEEL, MANUALLY RE-TRIM AIRPLANE

Autopilot should be considered inoperative until the cause of the mistrim has been investigated and corrected. Yaw damper may be re-engaged and used normally.

In RVSM Airspace and Autopilot Inoperative:

7. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

8. Advise ATC of loss of the autopilot system. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

RUDDER MISTRIM (amber ←RUD or RUD→ annunciation on PFD)

Indicates a mistrim of the rudder while the autopilot is engaged. The autopilot cannot trim the airplane in yaw. During large changes in airspeed, engine failure, or single engine operation, illumination of this message may occur. If the autopilot is disconnected while this message is displayed, high rudder pedal forces and yawing motion are possible. The following procedure should be followed:

1. Rudder Pedals ..... HOLD FIRMLY
2. Rudder Tab Knob ..... ROTATE SLOWLY IN THE DIRECTION OF INDICATED MISTRIM UNTIL ANNUNCIATION EXTINGUISHES

If the annunciator stays extinguished and no other annunciations illuminate:

3. Continue to operate the autopilot in a normal manner after the annunciation extinguishes.

If the annunciator remains illuminated or reappears with no changes in airspeed or configuration from the previous trimmed condition:

3. Rudder Pedals ..... HOLD FIRMLY
4. Rudder Tab Knob ..... ROTATE SLOWLY IN THE DIRECTION OF INDICATED MISTRIM UNTIL ANNUNCIATION EXTINGUISHES
5. Autopilot ..... DISCONNECT
6. Rudder Tab Knob ..... MANUALLY RE-TRIM AIRPLANE

NOTE

Yaw Damper should be considered inoperative until the cause of the mistrim has been investigated and corrected. The rudder boost may also be inoperative. Many King Air 300 aircraft require the yaw damper to be operative above 11,000 feet MSL, and rudder boost continuously. Refer to the Limitations section of the Aircraft Flight Manual, or appropriate Airplane Flight Manual Supplement for further information.

7. Autopilot ..... ENGAGE

In RVSM Airspace and Autopilot Inoperative:

8. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

9. Advise ATC of loss of the autopilot system. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of automatic altitude hold capability.

FLASHING AMBER MODE ANNUNCIATION

NOTE

Abnormal mode transitions (those not initiated by the pilot or by normal sequencing of the AFCS) will be annunciated by flashing the disengaged mode in amber on the PFD. Upon loss of a selected mode, the system will revert to the default mode for the affected axis, either ROL or PIT. After 10 seconds, the new mode (PIT or ROL) will be annunciated in green.

LOSS OF SELECTED VERTICAL MODE (FLC, VS, VPTH, ALT, GS, GP)

1. Autopilot mode controls.....SELECT ANOTHER VERTICAL MODE

If on an instrument approach, disconnect autopilot and continue manually or execute missed approach:

2. AP/YD DISC / TRIM INTRPT Button .....PRESS and RELEASE

LOSS OF SELECTED LATERAL MODE (HDG, VOR, GPS, LOC, VAPP, BC)

1. Autopilot mode controls..... ....SELECT ANOTHER LATERAL MODE

If on an instrument approach, disconnect autopilot and continue manually or execute missed approach:

2. AP/YD DISC / TRIM INTRPT Button .....PRESS and RELEASE

YAW DAMPER AUTOMATIC DISCONNECT (Amber Flashing 'YD')

Flashing amber 'YD' in flight indicates that yaw damper has disconnected. If the disconnect was not pilot initiated, the yaw servo has failed. The autopilot may be re-engaged after a yaw servo failure.

NOTE

Many King Air 300 aircraft require the yaw damper to be operative above 11,000 feet MSL, and rudder boost continuously. Refer to the Limitations section of the Aircraft Flight Manual, or appropriate Airplane Flight Manual Supplement for further information.

YAW AXIS FAILURE (Amber YAW annunciator on PFD)

1. Indicates a failure of the yaw axis of the autopilot. The yaw damper will disconnect. The autopilot may be engaged and disengaged normally, but the yaw damper and rudder boost will be inoperative.

2. Autopilot ..... AS DESIRED

WARNING

DO NOT USE THE AUTOPILOT ON A COUPLED ILS, LOC, LP/LPV OR LNAV/VNAV APPROACH WITH A FAILED YAW SERVO. THE AUTOPILOT MAY NOT BE ABLE TO MAINTAIN DIRECTIONAL CONTROL IN THE EVENT OF AN ENGINE FAILURE.

NOTE

If the amber YAW annunciator illuminates without the autopilot engaged, it may indicate a faulted AHRS. Monitor both PFDs and the standby attitude indicator for abnormal attitude indications.

NOTE

Many King Air 300 aircraft require the yaw damper to be operative above 11,000 feet MSL, and rudder boost continuously. Refer to the Limitations section of the Aircraft Flight Manual, or appropriate Airplane Flight Manual Supplement for further information.

ELECTRONIC STABILITY AND PROTECTION

MANUAL ESP DISENGAGEMENT

If necessary, ESP may be manually disconnected using any one of the following methods.

1. AP/YD DISC / TRIM INTRPT Button .....PRESS and HOLD
   (Pilot's or Copilot's control wheel)

2. CWS Button (Pilot's or Copilot's control wheel).....PRESS and HOLD

3. AFCS SERVOS Circuit Breaker..... PULL
   (Right circuit breaker panel)

4. AUX – SYSTEM SETUP 2 Page on MFD..... DISABLE STABILITY AND PROTECTION

ALTITUDE MISCOMPARE ALT MISCOMP

This message is displayed when the G1000 detects a difference of 200 feet or greater between the pilot's and copilot's altitude information. Refer to the G1000 Cockpit Reference Guide for additional information.

1. Altimeter Settings ..... VERIFY both pilot and copilot have the correct barometric altimeter setting.
2. Pilot's and Copilot's Altitude ..... COMPARE with Standby Altimeter

WARNING

THE STANDBY ALTIMETER USES THE SAME STATIC SOURCE AS THE COPILOT'S SIDE AIR DATA COMPUTER (ADC2). DO NOT USE STANDBY ALTIMETER AS SOLE SOURCE IN DETERMINING CORRECT ALTITUDE.

If Pilot and Standby Altimeter *Agree (Copilot Altimeter Differs):*

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

3. SENSOR Softkey (Copilot PFD) ..... PRESS
4. ADC1 Softkey ..... PRESS
5. PFD Displays ..... CONFIRM BOTH ON ADC1 annunciator is displayed on both PFDs.

- In RVSM Airspace:

6. Altitude ..... CROSS-CHECK USING STANDBY ALTIMETER
   Record each altimeter reading for contingency procedure use
7. Advise ATC of loss of redundancy of primary altimetry systems. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of primary altimetry systems.

If Copilot and Standby Altimeter Agree (Pilot Altimeter Differs):

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

3. Autopilot ALT Mode.....DISENGAGED
4. Pilot's Static Air Source.....SELECT ALTERNATE

   A sudden sustained change in rate-of-climb indication accompanied by abnormal indicated airspeed and altitude changes beyond normal calibrated differences observed on the Pilot's PFD would indicate a blockage of the pilot's static system.

- If Pilot's and Copilot's altimeters agree within normal calibrated differences with Pilot's Alternate Static Air Source in the ALTERNATE position:

  Refer to Section 5, PERFORMANCE in the aircraft AFM for Airspeed Calibration-Alternate System and Altimeter Correction–Alternate System for the Pilot's Altimeter.

- In RVSM Airspace:

5. Altitude ..... CROSS-CHECK USING STANDBY ALTIMETER
   Record each altimeter reading for contingency procedure use
6. Advise ATC of loss of redundancy of primary altimetry systems. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of redundancy of primary altimetry systems.

If no change in rate-of-climb, airspeed, or altitude is observed:

7. Pilot's Static Air Source.....SELECT NORMAL
8. Compare indicated altitude to GPS altitude on MFD AUX-GPS STATUS page to aid in determining which primary system is most accurate.

NOTE

When comparing indicated altitude to GPS altitude, deviations from standard temperature or pressure can cause indicated altitude to deviate from GPS altitude. Those errors are largest at high altitude. Below 10,000 feet with the correct local altimeter setting set, GPS altitude will usually be within 600 feet or better of the correct indicated altitude. Use the following guidelines to help estimate correct altitude from non-standard conditions:

- Temperatures WARMER than standard can cause GPS altitude to read HIGHER than indicated altitude.
- Pressures LOWER than standard can cause GPS altitude to read HIGHER than indicated altitude.

If Able to Identify Accurate Altitude Source:

1. Autopilot ALT Mode..... DISENGAGED
2. Use SENSOR softkey to select most accurate ADC on both PFD's.
3. Confirm or annunciators are displayed on both PFDs
4. Autopilot ALT Mode..... ENGAGE AS DESIRED

- In RVSM Airspace:

5. Altitude ..... CROSS-CHECK USING STANDBY ALTIMETER
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

6. Advise ATC of loss of redundancy of primary altimetry systems. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of redundancy of primary altimetry systems.

If Unable to Identify Accurate Altitude Source:

1. Avoid IFR conditions if possible; consider diversion to visual conditions and LAND AS SOON AS PRACTICAL.
2. Maintain altitudes based on LOWEST indicated altitude.
3. Advise ATC of inability to verify correct altitude. If in RVSM airspace, perform appropriate RVSM contingency procedures for loss of all primary altimetry systems and accurate altitude reporting capability.
4. If unable to descend in visual conditions, plan an ILS, LPV, or RNAV (GPS or GNSS) LNAV/VNAV approach with course intercept well outside the Final Approach Fix (FAF).
5. Once glideslope or glidepath is captured, determine most accurate altitude source when crossing FAF.
6. Reference ILS Decision Altitude or GPS based approach Minimum Descent Altitude to most accurate altimeter based on FAF crossing.

WARNING

VARIOUS TAWS ALERTS ARE BASED ON GPS ALTITUDE AND POSITION INFORMATION. TAWS WARNINGS AND CAUTIONS ARE INDEPENDENT OF ADC DATA. IF A TAWS WARNING OR CAUTION IS RECEIVED, CONSIDER IT ACCURATE AND TAKE IMMEDIATE AVOIDANCE ACTION.

AIRSPEED MISCOMPARE IAS MISCOMP

This message is displayed when the G1000 detects a difference of 7 KIAS or greater between the pilot's and copilot's airspeed indicators (10 KIAS difference during takeoff or landing roll). Refer to the G1000 Cockpit Reference Guide for additional information.

1. Pilot's and Copilot's Airspeed ..... COMPARE with Standby Airspeed Indicator

WARNING

THE STANDBY AIRSPEED INDICATOR USES THE SAME PITOT-STATIC SOURCES AS THE COPILOT'S SIDE AIR DATA COMPUTER (ADC2). DO NOT USE STANDBY AIRSPEED INDICATOR OR STANDBY ALTIMETER AS SOLE SOURCE IN DETERMINING CORRECT AIR DATA INFORMATION.

If Pilot and Standby Airspeed Indicator Agree (Copilot Airspeed Differs):

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

2. SENSOR Softkey (Copilot's PFD) ..... PRESS
3. ADC1 Softkey ..... PRESS
4. PFD Displays ..... CONFIRM BOTH ON ADC1 annunciator is displayed on both PFDs

- In RVSM airspace:

5. Altitude ..... CROSS-CHECK USING STANDBY ALTIMETER
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

6. Advise ATC of loss of redundancy of primary altimetry systems. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of redundancy of primary altimetry systems.

If Copilot and Standby Airspeed Indicator Agree (Pilot Airspeed Differs):

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

2. Pilot and Copilot ALTITUDE ..... NOTE

If Pilot's and Copilot's Altitude Agree:

3. Airspeed 120 KIAS MINIMUM on slowest indicator.
4. Monitor all three airspeed indicators during changes in power or altitude to determine which indicators are inaccurate. Indications of inaccurate airspeed include:
    - No change in indicated airspeed when power change and altitude maintained.
    - Indicated airspeed increases when climbing or decreases when descending.
5. Use SENSOR softkey to select most accurate ADC on the affected PFDs.
6. Airspeed …….RESUME NORMAL SPEEDS

If Pilot's and Copilot's Altitude Do Not Agree:

3. Refer to Abnormal Procedures, ALT MISCOMP procedure to determine most accurate ADC.

PITCH MISCOMPARE PIT MISCOMP

This message is displayed in the upper right corner of the PFD when the G1000 detects a difference between the pilot's and copilot's pitch attitude of more than 5 degrees. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. Refer to STANDBY ATTITUDE indicator to determine which AHRS is providing the most accurate data.
2. Use SENSOR softkey to select the most accurate AHRS on the affected PFD.

ROLL MISCOMPARE ROLL MISCOMP

This message is displayed in the upper right corner of the PFD when the G1000 detects a difference between the pilot's and copilot's roll attitude of more than 6 degrees. Refer to the GARMIN G1000 Cockpit Reference Guide for additional information.

1. Refer to STANDBY ATTITUDE indicator to determine which AHRS is providing the most accurate data.
2. Use SENSOR softkey to select the most accurate AHRS on the affected PFD.

HEADING MISCOMPARE HDG MISCOMP

This message is displayed in the upper right corner of the PFD when the G1000 detects a difference between the pilot's and copilot's heading information. Refer to the GARMIN G1000 Cockpit Reference Guide for additional information.

1. WSHLD ANTI-ICE Switches (PILOT and COPILOT) ..... OFF
2. CABIN TEMP MODE selector ..... OFF
3. ELEC HEAT ..... OFF
4. Refer to Magnetic Compass to determine which AHRS is providing the most accurate heading information.
5. Use SENSOR softkey to select the most accurate AHRS on the affected PFD.
6. WSHLD ANTI-ICE Switches ..... AS REQUIRED
7. CABIN TEMP MODE ..... AS DESIRED
8. ELEC HEAT ..... AS REQUIRED

NOTE

The magnetic compass is affected by windshield anti-ice and/or air conditioner operation. These items must be turned OFF prior to referencing magnetic compass heading, and then may be reselected ON. With windshield anti-ice OFF, fog or frost may form on the inside surface of the windshield. The windshield anti-ice should be turned off only long enough to reference magnetic compass or the pilot should descend to a warmer altitude if terrain, fuel, and endurance permit.

AMBER HEADING DISPLAY (GRS 7800 AHRS Only)

The PFD heading display will turn amber when:

- Unreliable heading data exists as detected by the system.
- Operating in DG FREE Mode when the system detects reliable heading data is available.

If Heading Display is Amber When Operating in DG SLAVE Mode:

1. Autopilot (If Engaged) ..... SELECT ROL MODE
2. HDG MODE Softkey on PFD ..... PRESS
3. DG FREE Softkey ..... PRESS
4. Verify the heading display is shown in cyan.
5. Use the 'HDG –" and 'HDG +" softkeys to correct heading as required.
6. Autopilot ..... RE-SELECT DESIRED LATERAL MODE

If Heading Display is Amber When Operating in DG FREE Mode:

1. Autopilot (If Engaged) ..... SELECT ROL MODE
2. HDG MODE Softkey on PFD ..... PRESS
3. DG SLAVE Softkey ..... PRESS
4. Verify the heading display is shown in white.
5. Autopilot ..... RE-SELECT DESIRED LATERAL MODE

LOSS OF ALTITUDE REPORTING IN RVSM AIRSPACE

If ATC is not receiving altitude reporting information while in RVSM airspace:

1. XPDR Softkey .....SELECT OTHER TRANSPONDER
2. Verify selected transponder is in ALT mode.

LOSS OF ALTITUDE ERROR CORRECTION

Loss of altitude (static source) error correction in the air data computers is indicated by an advisory message in the alerts window of the PFD. The static source error correction is effective only above 18,000 feet MSL. The following advisory messages will post:

ADC1 ALT EC - ADC1 altitude error correction is unavailable.

and/or

ADC2 ALT EC - ADC2 altitude error correction is unavailable.

If a loss of altitude error correction advisory is received:

- Above 18,000 feet MSL:

1. Altitude .....MAINTAIN USING CROSS-SIDE ALTIMETER OR STANDBY ALTIMETER

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

- In RVSM Airspace:

1. Advise ATC of loss of redundancy of primary altimetry systems. Perform appropriate RVSM contingency procedures outlined in the operator's RVSM manual for the loss of redundancy of primary altimetry systems.
2. Record each altimeter reading for RVSM contingency procedure use.

DISPLAY UNIT FAILURE

PFD FAILURE

PFD failure is indicated by a complete loss of image on a display. The pilot should use the cross side PFD and the standby flight instruments for information to fly the airplane. If only individual elements of the display are failed, refer to appropriate procedures for the individual failures.

To display composite primary flight information and the engine instruments on the MFD:

1. DISPLAY BACKUP Button (on audio panel of affected side) ..... PRESS

   The DISPLAY BACKUP button may be pressed again to return the MFD to its normal presentation. With the MFD in its normal display presentation, the pilot has access to functions and pages unique to the MFD that are not accessible when the MFD is in the composite display.

   NOTE

   The CDI SYNC and BARO SYNC settings must be ON to allow the operating PFD controls to affect settings on the MFD when the MFD is in the Display Backup mode. These settings are accessible on the MFD when in the normal display presentation on the AUX – SYSTEM SETUP page.

2. Autopilot Mode Panel ..... TRANSFER (XFR button) to operating PFD
3. Autopilot ..... RE-ENGAGE and select modes
4. Transponder ..... SELECT operating transponder
5. Audio Panels ..... SELECT operating COM Radio

NOTE

Use the operating PFD to control Com frequency selection, Com and Nav volume, and Altimeter Barometric Pressure setting.

MFD FAILURE

MFD failure is indicated by a complete loss of image on the center display. A failed MFD will auto-revert to PFD 1 to display engine data on PFD 1. Engine data may be displayed on PFD 2 by pressing the Copilot's Audio Panel DISPLAY BACKUP button.

If MFD auto-reversion does not occur, or to manually revert the PFD 2 display:

1. Audio Panel DISPLAY BACKUP Button ..... PRESS

2. Electronic Chart Data will not be available following an MFD failure. Use the following procedure if a secondary source of aeronautical information is not available in the airplane.

   a. Load approaches, arrivals, and departures into the Active Flight Plan using the PROC button on either PFD. The procedure's course can be displayed on either PFD Inset Map window. Navigate using the course pointer and CDI on the PFDs.

   b. For instrument approach procedures, obtain altitude information from ATC.

DUAL GPS/SBAS FAILURE (AMBER "DR" OR "LOI" ON HSI)

LOSS OF GPS/SBAS NAVIGATION DATA

When both GPS/SBAS receivers are inoperative or GPS navigation information is not available or invalid, the G1000 system will enter one of two modes: Dead Reckoning mode (DR) or Loss Of Integrity mode (LOI). The mode is indicated on the HSI by an amber "DR" or "LOI". Which mode is active depends on the distance from the destination airport in the active flight plan.

If the LOI annunciation is displayed, revert to an alternate means of navigation appropriate to the route and phase of flight. In Dead Reckoning mode, the MAP – NAVIGATION MAP will continue to be displayed with a ghosted aircraft icon in the center and an amber 'DR' overwriting the icon. Aircraft position will be based upon the last valid GPS position, then estimated by Dead Reckoning methods. Changes in true airspeed, altitude, or winds aloft can affect the estimated position substantially. Dead Reckoning is only available in Enroute mode; Terminal and Approach modes do not support DR. Course deviation information will be displayed as an amber CDI on both PFDs and will remain for up to 20 minutes after GPS position data has been lost. The autopilot and/or flight director may be coupled in GPS mode while the system is in Dead Reckoning mode. Refer to the G1000 Cockpit Reference Guide for further information. Revert to an alternate means of navigation appropriate to the route and phase of flight.

If Alternate Navigation Sources (ILS, LOC, VOR, DME, ADF) Are Available:

1. Navigation ..... USE ALTERNATE SOURCES

If No Alternate Navigation Sources Are Available:

DEAD RECKONING (DR) MODE - ACTIVE WHEN THE AIRPLANE IS GREATER THAN 30 NM FROM THE DESTINATION AIRPORT:

1. Navigation - Use the airplane symbol, magenta course line on the map display and the amber CDI for course information.

NOTE

- ALL INFORMATION NORMALLY DERIVED FROM GPS TURNS AMBER. ALL OF THIS INFORMATION WILL BECOME LESS ACCURATE OVER TIME.
- TAWS is inoperative.
- DR mode uses heading, true airspeed, last known wind data, and the last known GPS position to estimate the airplane's current position. DR information will be available for a maximum of 20 minutes.
- MAP – TRAFFIC MAP display is not dependent on GPS information. The position of displayed traffic relative to the airplane symbol on the map is still accurate.

LOSS OF INTEGRITY (LOI) MODE - ACTIVE WHEN THE AIRPLANE IS WITHIN 30NM OF THE DESTINATION OR DEPARTURE AIRPORT (AS CALCULATED FROM THE PREVIOUS GPS OR DR POSITION):

1. Navigation - Fly toward known visual conditions. Use ATC or other information sources as available.

NOTE

- All information derived from GPS or DR will be removed from the displays.
- TAWS is inoperative.
- The airplane symbol is removed from all maps. The map will remain centered at the last known position. "NO GPS POSITION" will be annunciated in the center of the map.

GPS APPROACH INTEGRITY LIMITS EXCEEDED

During a GPS LP, LPV, LNAV/VNAV, or LNAV+V approach using SBAS, if the Horizontal or Vertical integrity limits are exceeded, the G1000 System will downgrade the approach. This will be annunciated in the ALERTS window and may also be accompanied by a change in the indicated approach type on the HSI. GPS glide path vertical guidance will be removed from the PFD unless the minimum can still be supported using Baro VNAV. The approach may be continued as annunciated.

During any GPS approach in which both precision and non-precision integrity limits are exceeded, the G1000 System will flag the lateral guidance and display a system message "ABORT APPROACH loss of navigation". Immediately upon viewing the message, the unit will revert to Terminal navigation mode integrity limits. If the position integrity is within these limits lateral guidance will be restored and the GPS may be used to execute the missed approach, otherwise alternate means of navigation must be utilized.

ILS DATABASE FREQUENCY AND/OR COURSE MISMATCH

In some rare instances, the actual course and/or frequency for an ILS localizer may not match the course or frequency stored in the G1000 database. This occurs most often when an ILS course or frequency change is made by the FAA in between Jeppesen database update cycles. Manual course or frequency changes can be made to override the auto-loaded values in the G1000 database whenever an ILS approach is loaded into the G1000 via the FMS. ADVISORY messages will post in the ALERTS window on the PFDs prompting the pilot verify course and/or frequency information. Use the latest published instrument approach procedure information to verify all course and frequency information.

While flying ILS approaches with manually overridden course or frequency information:

- For airplanes with TAWS-A installed, the Glideslope Deviation Alerting (GSD) will be function normally.
- If SVS Pathways are turned on for display, they must be turned off prior to turning inbound onto the final approach course to prevent possible confusion. This is because the pathway display is also dependent on accurate database information to display proper guidance.

If SVS Pathways are Displayed While Flying a Manually Overridden Frequency or Course on an ILS Approach:

Prior to Turning Inbound on the Final Approach Course*:*

1. PFD Softkey on PFD1 and/or PFD2 ..... PRESS
2. SYN VIS Softkey ..... PRESS
3. PATHWAY Softkey ..... PRESS TO REMOVE PATHWAY DISPLAY

LOSS OF TEMPERATURE INPUT ON BARO VNAV APPROACHES (VDI NO COMP on PFD)

Airplanes that have system software 0985.07 or later installed have the capability of flying an automatically generated and temperature compensated glidepath on certain GPS approaches when SBAS is not available. This automatically generated glidepath depends upon temperature input from the air data computers to function properly. In the event that the temperature input fails to its respective display during an approach, the following will be observed:

- If the AFCS is coupled to the affected side in APR mode, “GP” will be displayed in flashing black text over amber background for 5 seconds, then revert to PIT mode. The AFCS will remain coupled in GPS Mode (lateral).
- If the AFCS is coupled to the non-affected side in APR mode, it will remain coupled in APR Mode (GP remains green).
- The affected side VDI is flagged with “NO GP” displayed in the VDI.
- The “L/VNAV” indication on the CDI remains for both pilot and copilot side.
- The non-affected side VDI remains displayed.
- A “VDI NO COMP” annunciation posts in black text on a white background in the upper right corner of the non-affected side PFD.
- The non affected side PFD will continue to display the VDI. The autopilot may be transferred and coupled to this VDI if necessary.

If both air data temperature inputs are failed, the VDIs on both displays will be flagged and no glidepath will be generated. The approach may be continued to LNAV minima.

If VDI NO COMP Annunciation is Observed and AFCS is Coupled to Affected (Failed) Side:

1. XFR Button on GMC 710 ..... PRESS
2. APR Mode ..... RE-SELECT AS DESIRED

If Both Air Data Temperature Inputs Have Failed:

1. AFCS Vertical Mode ..... RE-SELECT AS DESIRED
2. Continue the approach using LNAV only minima.

VDI MISCOMPARE ON BARO VNAV APPROACHES (VDI MISCOMP on PFD)

If a difference in temperature compensated altitudes from the two air data computers differs by more than 50 feet, an amber VDI MISCOMP annunciation will be displayed on both PFDs.

If a VDI MISCOMP Annunciation is Observed on the PFDs:

1. Altimeter Settings ..... VERIFY both pilot and copilot have the correct barometric altimeter setting

If VDI MISCOMP Annunciation Persists and Able to Determine Accurate VDI:

2. XFR Button on GMC 710 ..... PRESS AS REQUIRED TO SELECT ACCURATE VDI SOURCE

3. APR Mode ..... RE-SELECT AS DESIRED

If VDI MISCOMP Annunciation Persists and Unable to Determine Accurate VDI:

2. Do not use the VDI for vertical guidance information. Approach may be continued to LNAV only minima.

LOSS OF RADIO TUNING FUNCTIONS

1. COM Frequency Toggle Button ..... PRESS AND HOLD FOR 2 SECONDS

NOTE

The above procedure will tune the active COM field to the emergency frequency 121.5. Certain failures of the tuning system will automatically tune 121.5 without pilot action.

If the EMERG FREQ switch is installed, the following alternate procedure may be used:

1. EMERG FREQ switch ..... LIFT COVER AND PRESS

NOTE

The above procedure will tune the active COM 1 field to the emergency frequency 121.5. COM 2 operation is not controlled by the EMERG FREQ switch.

FAILED AIRSPEED, ALTITUDE, AND/OR VERTICAL SPEED

(RED "X" ON PFD AIRSPEED, ALTITUDE, AND/OR VERTICAL SPEED INDICATORS)

This indicates a loss of valid air data computer information to the respective system.

If Both Sides:

1. Airspeed, Altitude and Attitude..... MONITOR using standby indicators

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance Section of this Supplement.

2. Autopilot ALT Mode.....DIS-ENGAGED
3. Advise ATC of loss of all primary altimetry systems and if in RVSM airspace perform the appropriate RVSM contingency procedures for loss of all primary altimetry systems and accurate altitude reporting capability outlined in the operator's RVSM procedures manual.
4. Land as soon as practical.

If One Side Only:

1. Autopilot ALT Mode.....DISENGAGED
2. Affected PFD SENSOR Softkey .....PRESS
3. ADC Softkey.....PRESS the ADC softkey to select the functional ADC (ADC1 or ADC2)
4. Both PFDs..... CONFIRM "BOTH ON ADC1" OR "BOTH ON ADC2" annunciated on both PFDs.
5. Autopilot ALT Mode.....RESELECT AS DESIRED

- In RVSM Airspace:

6. Altitude ..... CROSS-CHECK USING STANDBY ALTIMETER
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

7. Perform appropriate RVSM contingency procedures for loss of redundancy of primary altimetry systems, outlined in the operator's RVSM procedures manual.

LOSS OF ALTITUDE ALERTER IN RVSM AIRSPACE

1. Autopilot ALT Mode.....ENGAGED.
2. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE
3. Perform appropriate RVSM contingency procedures for the loss of altitude alerting, outlined in the operator's RVSM procedures manual.

FAILED ATTITUDE AND/OR HEADING

(ATTITUDE FAIL AND/OR RED "X" OVER HEADING DISPLAY ON PFD)

This indicates a loss of pitch, roll, and/or heading information from AHRS. Refer to GARMIN G1000 Cockpit Reference Guide and Pilot's Guide for additional information. Interference from GPS repeaters operating inside nearby hangars or magnetic anomalies caused by nearby structures can cause an intermittent loss of attitude and heading displays while the aircraft is on the ground. This is usually accompanied by a BOTH ON GPS 1, BOTH ON GPS 2, or LOI annunciation. Moving the aircraft more than 100 yards away from the source of the interference should alleviate the condition.

Taxiing the aircraft before a valid GPS position has been acquired can cause attitude and/or heading display to indicate a failed condition. As soon as the aircraft acquires a valid GPS position, attitude and heading should return to normal.

WARNING

DO NOT TAKE OFF WITHOUT VALID, NORMAL ATTITUDE AND HEADING DISPLAYS

In Flight, If Both Sides:

1. Attitude ..... MONITOR using standby attitude gyro
2. WSHLD ANTI-ICE Switches (Pilot and Copilot)..... OFF

NOTE

The magnetic compass is erratic during windshield anti-ice and/or air conditioner operation. With windshield anti-ice OFF, windshield may form fog or frost on the inside surface. The windshield anti-ice should be turned off only long enough to reference magnetic compass or the pilot should descent to a warmer altitude if terrain, fuel, and endurance permit.

3. ELEC HEAT ..... OFF
4. CABIN TEMP MODE switch ..... OFF
5. Heading ..... MONITOR using magnetic compass

If in RVSM airspace:

6. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

7. Advise ATC of loss of autopilot system. Perform appropriate RVSM contingency procedures for loss of altitude hold capability, outlined in the operator's RVSM procedures manual.

8. Land as soon as practical.

NOTE

- The autopilot will disconnect and will not re-engage. ESP (if installed) will be inoperative.
- Reference the GPS track on MFD/PFD map to improve situational awareness. GPS will continue to display correct GPS based map, position, and track.
- Magnetic compass is influenced by windshield anti-ice and/or air conditioner operation. These items must be turned OFF prior to referencing magnetic compass heading. Leave these items OFF when maneuvering the aircraft by reference to the magnetic compass.

In Flight, If One Side Only:

1. Standby Attitude Gyro ..... MONITOR
2. Affected PFD SENSOR softkey ..... PRESS
3. AHRS softkey ..... PRESS Opposite Side AHRS softkey
4. Both PFDs ..... CONFIRM VALID ATTITUDE AND HEADING ARE DISPLAYED
   CONFIRM "BOTH ON AHRS1" or "BOTH ON AHRS2" annunciated on both PFDs

NOTE

The autopilot will disconnect and will not re-engage. ESP (if installed) will be inoperative.

If in RVSM airspace and autopilot inoperative:

5. Altitude ..... MONITOR AND MAINTAIN ASSIGNED ALTITUDE MANUALLY
   Record each altimeter reading for contingency procedure use

NOTE

The standby altimeter must be corrected for position error using the Altimeter Correction – Standby System chart in the Performance section of this supplement.

6. Advise ATC of loss of autopilot system. Perform appropriate RVSM contingency procedures for loss of altitude hold capability, outlined in the operator's RVSM procedures manual.

ENGINE INDICATION SYSTEM (EIS) FAILURE

(RED 'X' ON ENGINE DISPLAY)

If All Engine Gauges on One Engine Red 'X':

Indicates failure of the GEA for that engine

1. Check GEA circuit breakers ..... RESET once if tripped

If unable to restore engine gauges:

2. Move both power levers together using the engine with operating engine gauges to set power.

If One or More Engine Parameter Indications Are Flagged On Only One Engine:

1. Adjust power using the remaining indications and comparing to the opposite engine.

LOSS OF NAVIGATION DATA

(LATERAL DEVIATION BAR NOT PRESENT AND/OR GLIDESLOPE INDEX CLEARS)

This indicates a loss of data from the selected NAV source. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. CDI Softkey .....PRESS TO SELECT ALTERNATE NAVIGATION SOURCE
2. CONFIRM a valid navigation source is displayed giving valid navigation guidance.

INACCURATE FLIGHT DIRECTOR DISPLAY

Indicated by one or both flight directors commanding attitude contrary to intended flight path:

1. AP/YD DISC / TRIM INTRPT Button ..... PRESS
   (Pilot's or Copilot's control wheel)
2. Attitude ..... CROSSCHECK BOTH PFDs with the Standby Attitude Indicator
3. Flight Director Modes ..... RESELECT AS DESIRED

NOTE

If continued use of the flight director is desired, it is recommended that only basic modes (i.e., ROL and PIT) be selected initially. If this proves satisfactory, HDG and ALT may then be selected. Ensure navigation systems are set up correctly prior to attempting to engage NAV mode.

4. Autopilot ..... ENGAGE AS DESIRED if flight director commands are appropriate

If unable to restore Flight Director:

5. FD Button ..... PRESS to remove Flight Director from PFDs

BOTH ON ADC1, BOTH ON ADC2

This message is displayed on both PFDs and indicates that both pilot and copilot PFDs are displaying data from the same Air Data Computer. Normally the pilot's side displays ADC 1 information and the copilot's side displays ADC 2 information. Refer to GARMIN G1000 Cockpit Reference Guide and Pilot's Guide for additional information.

1. PFD (displaying data from opposite ADC) SENSOR softkey ..... PRESS
2. ADC1 or ADC 2 softkey ..... SELECT on-side ADC (ADC1 for Pilot PFD, ADC2 for copilot PFD)
3. PFD Displays ..... CONFIRM "BOTH ON ADC 1" or "BOTH ON ADC 2" message clears on both PFDs
4. If message does not clear, refer to Abnormal Procedures - FAILED AIRSPEED, ALTITUDE, AND/OR VERTICAL SPEED.

BOTH ON AHRS 1, BOTH ON AHRS 2

This message is displayed on both PFDs and indicates that both pilot and copilot PFDs are displaying data from the same Attitude Heading Reference System. Normally the pilot's side displays AHRS 1 information and the copilot's side displays AHRS 2 information. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. PFD (displaying data from opposite AHRS) SENSOR softkey ..... PRESS
2. AHRS1 or AHRS2 softkey ..... Select on-side AHRS (AHRS1 for Pilot PFD, AHRS2 for copilot PFD)
3. PFD Displays ..... CONFIRM "BOTH ON AHRS 1" or "BOTH ON AHRS 2" message clears on both PFDs
4. If message does not clear, refer to Abnormal Procedures - FAILED ATTITUDE AND/OR HEADING

BOTH ON GPS 1, BOTH ON GPS 2

This message is displayed on both PFDs and indicates that both pilot and copilot PFDs are displaying data from the same GPS/SBAS receiver. Normally the pilot's side displays GPS 1 and the copilot's side displays GPS 2 and is not pilot selectable. This may be caused by operation outside of SBAS satellite coverage in which case the non-selected GPS is still available in the event the active GPS fails. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. GPS/SBAS Status ..... CHECK
   a. Select AUX - GPS STATUS page on MFD.
   b. Select GPS1 then GPS2 softkeys and verify sufficient satellite reception.

USING ADC1 or ADC2 USING ADC1 USING ADC2

This message is displayed on both PFDs and indicates that both PFDs are displaying data from the opposite side air data computer. Normally the pilot's side displays ADC 1 and the copilot's side displays ADC 2. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. PILOT'S PFD SENSOR Softkey ..... PRESS
2. PILOT'S PFD ADC1 Softkey ..... PRESS
3. PFD Displays ..... CONFIRM "BOTH ON ADC1" message displayed on both PFDs
4. COPILOT'S PFD SENSOR Softkey ..... PRESS
5. COPILOT'S PFD ADC2 Softkey ..... PRESS
6. PFD Displays ..... CONFIRM "BOTH ON ADC 1" message clears on both PFDs

USING AHRS1 or AHRS2 USING AHRS1 USING AHRS2

This message is displayed on both PFDs and indicates that both PFDs are displaying data from the opposite side Attitude Heading Reference System. Normally the pilot's side displays AHRS 1 and the copilot's side displays AHRS 2. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

1. PILOT'S PFD SENSOR Softkey ..... PRESS
2. PILOT'S PFD AHRS1 Softkey ..... PRESS
3. PFD Displays ..... CONFIRM "BOTH ON AHRS1" message displayed on both PFDs
4. COPILOT'S PFD SENSOR Softkey ..... PRESS
5. COPILOT'S PFD AHRS2 Softkey ..... PRESS
6. PFD Displays ..... CONFIRM "BOTH ON AHRS 1" message clears on both PFDs

SYNTHETIC VISION

If SVS displays information inconsistent with G1000 primary flight instrumentation, or if operating in GRS 7800 DG FREE mode:

On the PFD:

1. PFD softkey ..... PRESS
2. SYN VIS softkey ..... PRESS
3. SYN TERR key ..... PRESS
4. SVS is removed from both PFD displays ..... VERIFY

Use G1000 primary displays for navigation and aircraft control.

If G1000 operation in display reversionary mode is required:

Select display backup mode on the G1000 system. When display backup mode is selected, the MFD will initially present a non-SVS (blue sky over solid brown ground) display. SVS will be presented on the backup display within 20 seconds if it was enabled on the PFD when display backup was selected.

TAWS AND GPWS

TAWS or GPWS CAUTION TERRAIN

When a TAWS or GPWS CAUTION occurs, take positive corrective action until the alert ceases. Stop descending or initiate either a climb or a turn, or both as necessary, based on analysis of all available instruments and information.

GPWS CAUTION advisories may also be generated when the aircraft's flaps and landing gear are not in the landing position at low altitudes at groundspeeds less than 157 knots. Ensure the aircraft's landing gear and flaps are in the desired configuration.

TAWS INHIBIT TAWS INH

The TAWS Forward Looking Terrain Avoidance (FLTA) and Premature Descent Alerts (PDA) functions may be inhibited to stop alerting if desired. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

To Inhibit TAWS:

1. Display the MAP – TAWS-A or MAP – TAWS-B page.
2. TAWS INH or INHIBIT Softkey ..... PRESS
3. Verify a TAWS INH annunciation displays on both PFDs and in the lower right corner of the MFD.

To Enable TAWS If Inhibited:

1. Display the MAP – TAWS-A or MAP – TAWS-B page.
2. TAWS INH or INHIBIT Softkey ..... PRESS
3. Verify the TAWS INH annunciations are removed from both PFDs and the MFD.

GPWS INHIBIT (TAWS-A Only) GPWS INH

For airplanes equipped with TAWS-A, some GPWS functions may be inhibited to stop alerting if desired. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

To Inhibit GPWS:

1. Display the MAP – TAWS A page
2. GPWS INH Softkey ..... PRESS
3. Verify a GPWS INH annunciation displays on both PFDs and in the lower right corner of the MFD.

To Enable GPWS if Inhibited:

1. Display the MAP – TAWS A page
2. GPWS INH Softkey ..... PRESS
3. Verify the GPWS INH annunciation is removed from both PFDs and the MFD.

NOTE

The GPWS INHIBIT feature will not inhibit altitude voice callouts or Glideslope/Glidepath deviation alerting.

FLAP OVERRIDE (TAWS-A Only) FLAP OVR

For airplanes equipped with TAWS-A, the GPWS flap configuration alerting function may be inhibited to stop alerting if desired. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

To Override Flap Altering:

1. Display the MAP – TAWS A page
2. FLAP OVR Softkey ..... PRESS
3. Verify a FLAP OVR annunciation displays on both PFDs and in the lower right corner of the MFD.

To Enable Flap Alerting if Overridden:

1. Display the MAP – TAWS A page
2. FLAP OVR Softkey ..... PRESS
3. Verify the FLAP OVR annunciation is removed from both PFDs and the MFD.

GLIDESLOPE/GLIDEPATH DEVIATION INHIBIT (TAWS-A Only) GS INH or GP INH

For airplanes equipped with TAWS-A, the glideslope or glidepath deviation alerting function may be inhibited to stop alerting if desired. Refer to GARMIN G1000 Cockpit Reference Guide for additional information.

To Inhibit Glideslope or Glidepath Alerting:

1. Display the MAP – TAWS A page
2. GS INH or GP INH Softkey ..... PRESS
3. Verify a GS INH or a GP INH annunciation displays on both PFDs and in the lower right corner of the MFD.

To Enable Glideslope or Glidepath Alerting if Inhibited:

1. Display the MAP – TAWS A page
2. GS INH or GP INH Softkey ..... PRESS
3. Verify the GS INH or GP INH annunciation is removed from both PFDs and the MFD.

NOTE

The GS INH or GP INH softkeys are only available for selection below 1000' radar altitude with the landing gear DOWN and the aircraft sufficiently below the Glideslope or Glidepath to generate a deviation alert.

TAWS N/A and TAWS FAIL TAWS N/A TAWS FAIL

1. If the amber TAWS N/A status annunciator is displayed on the PFDs and MFD, the system will no longer provide TAWS alerting or display relative terrain and obstacle elevations. The crew must maintain compliance with procedures that ensure minimum terrain and obstacle separation.
2. If the amber TAWS FAIL status annunciator is displayed on the PFDs and MFD, the system will no longer provide TAWS alerting or display relative terrain and obstacle elevations. The crew must maintain compliance with procedures that ensure minimum terrain and obstacle separation.

NOTE

The GPWS functions will continue to function if GPWS is available on a Class A TAWS system. Forward Looking Terrain Awareness alerts and Premature Descent Alerts will be unavailable.

GPWS FAIL (TAWS-A only)

(Yellow GPWS FAIL on PFD and MFD)

If the amber GPWS FAIL status annunciator is displayed on the PFDs and MFD, the G1000 will no longer provide GPWS alerting. The crew must maintain compliance with procedures that ensure minimum terrain separation as well proper aircraft landing gear and flap configuration.

NOTE

Forward Looking Terrain Awareness alerts, Premature Descent Alerts, and Altitude Voice Callouts will continue to function if TAWS is available.

TCAS II

TCAS II TRAFFIC ADVISORY

(Amber TRAFFIC on PFD and aural “TRAFFIC, TRAFFIC” advisory)

Conduct a visual search for the intruder. If successful, maintain visual acquisition to ensure safe separation.

The pilot should not initiate evasive maneuvers using information from the traffic map display only on a traffic advisory (TA) without visually sighting the traffic. These displays and advisories are intended only for assistance in visually locating the traffic and lack the flight path trends necessary for use in evasive maneuvering. However, unnecessary resolution advisories can be issued by TCAS II when other aircraft are operating at an altitude adjacent to the one that has been assigned to the climbing or descending TCAS aircraft. When climbing or descending in an environment where these unnecessary advisories are considered likely to occur (based on either airspace design, air traffic communications, visual acquisition or utilization of traffic displays), a reduction in vertical velocity is recommended until reaching the assigned altitude. As appropriate, the vertical velocity should be reduced to a rate between 500 and 1,500 ft/min, when approaching an altitude between 1,000 and 2,000 ft. above or below the altitude assigned in the ATC instruction or clearance.

TCAS II SYSTEM FAILURE TCAS FAIL

If the amber TCAS FAIL status annunciator is displayed on the PFDs and “FAIL”, “NO DATA,” DATA FAILED,” or “FAILED” is displayed on the traffic map displays, the system will no longer provide traffic information including Traffic or Resolution Advisories. The crew must visually acquire and maintain separation from other aircraft.

TCAS II SYSTEM STANDBY TCAS STBY

In flight, if the amber TCAS STBY status annunciator is displayed on the PFDs and “STANDBY”” is displayed on the traffic map displays, the system will no longer provide traffic information including Traffic or Resolution Advisories. The crew must visually acquire and maintain separation from other aircraft. The TCAS should be placed into TA/RA or TA ONLY mode as appropriate. If the TCAS is in Standby Mode while on the ground, it will be annunciated with a white TCAS STBY annunciator.

To Manually Place the TCAS II into TA/RA or TA ONLY Mode:

1. On Either PFD, XPDR/TFC Softkey.....PRESS
2. MODE Softkey .....PRESS
3. TA ONLY or TA/RA Softkey.....PRESS

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Section 4 - Normal Procedures

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COM RADIO COMMUNICATIONS BEFORE STARTING ENGINES

To obtain an ATC clearance before starting the engines:

1. BAT Switch (Master Switch) .....ON

Use Pilot's Audio Panel and Com 1 to Obtain ATC Clearance, then:

2. BAT Switch (Master Switch) .....OFF

PREFLIGHT INSPECTION

The following procedure is in addition to the AFM PREFLIGHT INSPECTION procedure and required only if the airplane is RVSM compliant and will be operated in an RVSM environment.

RIGHT AFT FUSELAGE

1. Right Side Fuselage Skin and Static Ports ..... CHECKED
2. Verify that the static port openings are smooth and round, and that there is no foreign material in the static port openings. Visually inspect the fuselage skin in the RVSM critical region (defined by markings in the vicinity of the static ports) to verify the absence of skin defects, physical damage, or large gaps and steps in the skin surface caused by improperly seated access panels or hatches. Refer to Figure 1 – Right side mirrors the Left.

LEFT AFT FUSELAGE

1. Left Side Fuselage Skin and Static Ports..... CHECKED
2. Verify that the static port openings are smooth and round, and that there is no foreign material in the static port openings. Visually inspect the fuselage skin in the RVSM critical region (defined by markings in the vicinity of the static ports) to verify the absence of skin defects, physical damage, or large gaps and steps in the skin surface caused by improperly seated access panels or hatches. Refer to Figure 1.

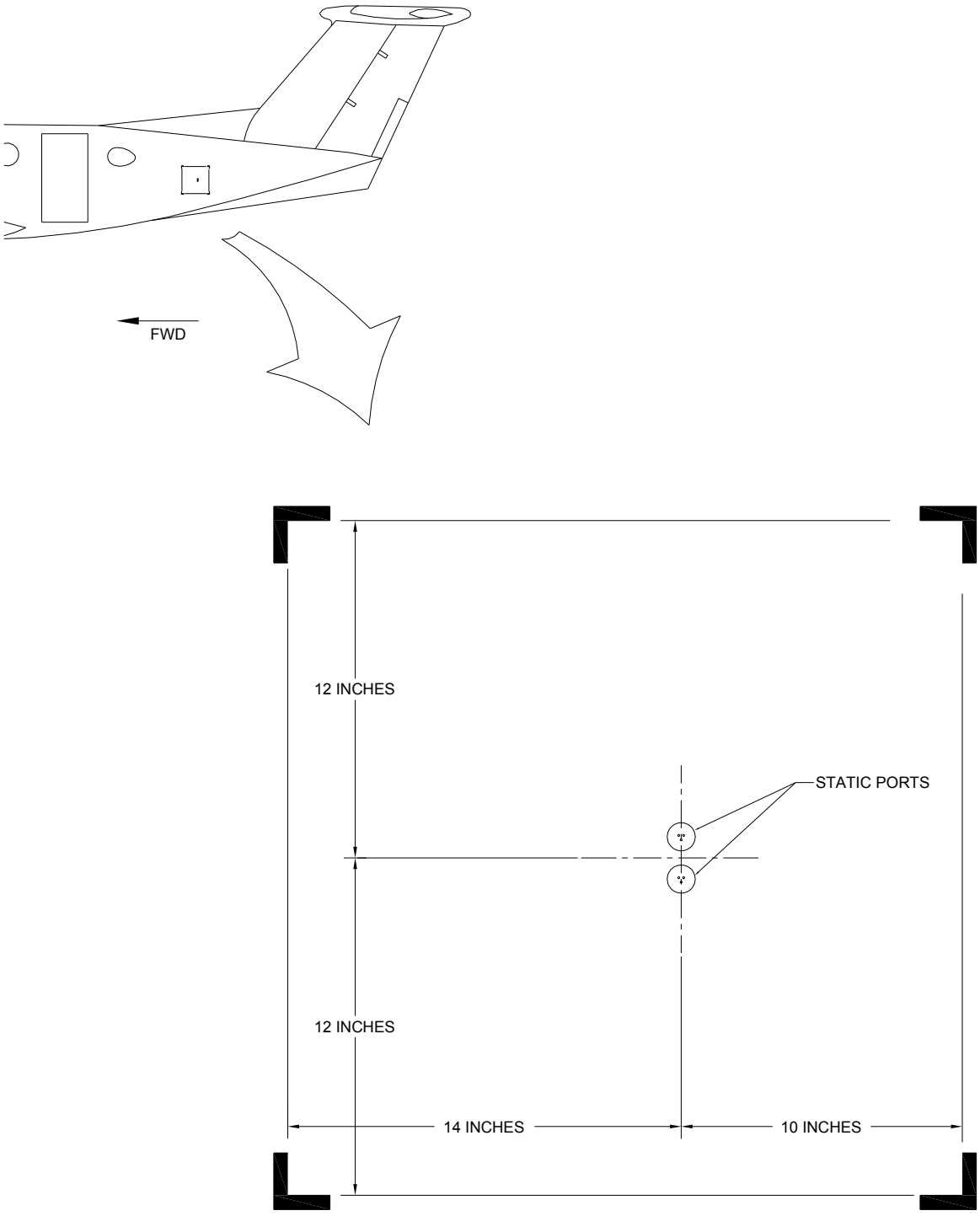


Figure 1, RVSM Critical Region

BEFORE ENGINE STARTING

These procedures should be conducted during the airplane's AFM BEFORE ENGINE STARTING checklist items, after the battery has been turned on and both AHRS have aligned.

NOTE

Autopilot preflight test will not begin until both AHRS have aligned. Autopilot Pre-Flight test begins when the white PFT message is displayed on each PFD. Autopilot Pre-Flight test has successfully completed when the white PFT message extinguishes and the autopilot disconnect tone sounds.

CAUTION

A red PFT or AFCS annunciator indicates a malfunction within the autopilot system. The autopilot, yaw damper, and electric elevator trim will be inoperative. The rudder boost may be inoperative.

1. Automatic Autopilot Preflight Test ..... COMPLETE
   a. Red AFCS Annunciator ..... ILLUMINATED DURING AHRS ALIGNMENT
   b. Red AFCS Annunciator ..... EXTINGUISHES When Autopilot Preflight Test Begins
   c. White PFT Annunciator ..... ILLUMINATED (~ 5 Seconds)
   d. White PFT Annunciator ..... EXTINGUISHES when preflight test complete
   e. Autopilot Disconnect Tone ..... SOUNDS

These procedures should be conducted after completing the airplane's AFM BEFORE ENGINE STARTING checklist items.

1. Standby Battery Switch ..... PUSH
   [ON] illuminated if Aircraft Battery is OFF,
   [ARM] illuminated if Aircraft Battery is ON
2. Standby Attitude Gyro Fail Flag ..... NOT DISPLAYED
   (listen for standby altimeter vibrator operation)
3. Database ..... REVIEW FOR VALID OPERATING DATES AND CYCLE NUMBER
4. ENT key on the MFD Control Panel ..... PRESS to acknowledge the G1000 database information and activate the selected pilot profile.
5. AUX – Weight Planning ..... INPUT LOAD DATA

BEFORE TAXI

These procedures should be conducted after completing the airplane's AFM BEFORE TAXI checklist items before brake release.

1. Standby Attitude Indicator ..... CHECK
   a. PULL TO CAGE Knob ..... PULL KNOB TO ERECT GYRO
   b. Instrument Fail Flag ..... NOT DISPLAYED IN INSTRUMENT FACE
   c. PFD1, PFD2, and Standby Attitude Indicator ..... COMPARE and CROSS CHECK

2. Altimeters ..... SET and CROSS CHECK
   PFD 1, PFD 2, Standby Altimeter

   If barometric pressure settings on the PFD1 and PFD2 altimeters differ by more than 0.03 in-Hg (1 HPa), the baro display on both PFDs will be amber.

3. Radar Altimeter ..... TEST
   a. RA TEST Softkey ..... PRESS
      (MFD AUX – SYSTEM STATUS Page)
   b. RA TEST Annunciation ..... ILLUMINATED on PFD1 and PFD2
   c. RA Display Window ..... Positive radar altitude on PFD1 and PFD2
   d. RA Ground Reference ..... Correlates to radar altitude on
      PFD 1 and PFD 2 Altimeter displays
   e. RA TEST Softkey ..... PRESS TO STOP TEST
   f. PFD1 and PFD2 Radar Altimeter Displays ..... 0 Feet
   g. RA Ground Reference ..... Correlates to 0 feet radar altitude on
      PFD 1 and PFD 2 Altimeter displays
   h. RA TEST Annunciation ..... REMOVED from PFD1 and PFD2

TAXI

The following procedure should be accomplished while the aircraft is taxiing and prior to conducting the airplane's AFM BEFORE TAKEOFF (RUNUP) checklist.

NOTE

Taxiing the aircraft before a valid GPS position has been acquired can cause attitude and/or heading display to indicate a failed condition. Interference from GPS repeaters or magnetic anomalies can cause an intermittent loss of attitude and heading displays while the aircraft in on the ground.

1. Flight Instruments ..... CHECK
   a. Compare attitude displayed by PFD1, PFD2, and Standby Attitude Indicator.
   b. Verify the correct barometric pressure is set in the PFD1, PFD2, and Standby Altimeters.
   c. Compare altitude displayed by PFD1, PFD2, and Standby Altimeter. Cross-check and verify the altitudes agree within 75 feet.
   d. Compare heading displayed by PFD1, PFD2, and Magnetic Compass.

NOTE

The standby compass is erratic during windshield anti-ice and/or air conditioner operation. Windshield anti-ice and air conditioner must be OFF for heading verification check.

e. Verify turn rate and slip indicator display appropriately.

BEFORE TAKEOFF (RUN-UP)

The following procedures supersede the same procedures in the airplane's AFM BEFORE TAKEOFF (RUNUP) checklist items.

1. Yaw Damp ..... CHECK

   a. Yaw Damp ..... ON

   b. Rudder Pedals ..... CHECK FOR ADDED RESISTANCE

   c. AP/YD DISC/TRIM INTRPT Button ..... PRESS

   d. [RUD BOOST OFF] ..... ILLUMINATES

   e. Yaw Damp ..... VERIFY DISCONNECTED

   f. Repeat Items a through c for copilot's side

   g. Rudder Boost Switch ..... OFF
   [RUD BOOST OFF] - ILLUMINATED

   h. Rudder Boost Switch ..... RUDDER BOOST
   [RUD BOOST OFF] - EXTINGUISHED

2. Electric Elevator Trim Control ..... CHECK

   a. Pilot's Control Wheel

   - Left and Right Segments ..... ACTUATE INDIVIDUALLY
     (Verify there is no elevator tab wheel movement)

   - Left and Right Segments ..... ACTUATE TOGETHER
     (Verify proper elevator tab wheel movement)

   - With Elevator Tab Wheel in Motion,
     AP/YD DISC / TRIM INTRPT Button ..... PRESS AND HOLD
     (verify elevator tab wheel motion stops)

   - Manually Operate Elevator Tab Wheel ... VERIFY Pitch Trim Servo is Not Engaged

b. Copilot's Control Wheel (If Installed)

- Left and Right Segments..... ACTUATE INDIVIDUALLY
  (Verify there is no elevator tab wheel movement)
- Left and Right Segments..... ACTUATE TOGETHER
  (Verify proper elevator tab wheel movement)
- With Elevator Tab Wheel in Motion,
  AP/YD DISC / TRIM INTRPT Button..... PRESS AND HOLD
  (verify elevator tab wheel motion stops)
- Pilot's Trim Override..... CHECK

  Activate the copilot's Pitch Trim Switches nose down. Verify elevator tab wheel is moving nose down. While the tab wheel is moving in the DN direction, activate the pilot's Pitch Trim Switches nose up. Verify the elevator tab wheel begins to move in the UP direction. Release both pilot's and copilot's Pitch Trim switches and reset elevator tab as required.

- Manually Operate Elevator Tab Wheel .....VERIFY Pitch Trim Servo is Not Engaged

c. Press GA Button on Left power lever ..... VERIFY FD Command Bars show Takeoff Attitude
'TO / / TO' is Annunciated in Mode Window on Both PFDs

BEFORE TAKEOFF (FINAL ITEMS)

The following procedures supersede the same procedures in the airplane's AFM BEFORE TAKEOFF (FINAL ITEMS) checklist items.

1. V_1, V_2, Minimum Takeoff Power.....SET OR CONFIRM

These procedures should be conducted after completing the airplane's AFM BEFORE TAKEOFF (FINAL ITEMS) checklist.

2. PFD Attitude and Heading .....NORMAL
3. GPS Position..... VALID, 'LOI' NOT ANNUNCIATED on HSI
4. Standby Attitude Indicator..... ERECT and NORMAL, Fail Flag not in view

TAKEOFF

This procedure should be conducted after brake release during the takeoff roll but before becoming airborne.

1. Verify correspondence of PFD airspeed display and standby airspeed.

CRUISE WITHIN RVSM AIRSPACE

1. Altimeters ..... CROSS-CHECK
   Maximum Difference: 200 Feet

   Ensure Matched barometric pressure settings (29.92 inHg, STD BARO, or 1013 mb).

2. Altitude ..... RECORD as Required

   Record pilot, copilot and standby altimeter readings upon entering RVSM airspace and as required thereafter while in RVSM airspace for contingency situations.

3. Autopilot ALT Mode..... Maximum Altitude Deviation: +/- 65 Feet

   During normal operations, the ADC coupled to the autopilot will supply altitude data to the active transponder.

CLIMB, CRUISE, AND DESCENT

Disengage autopilot and yaw damper and re-trim the airplane in roll and/or yaw, if slight dutch roll activity is observed. Re-engage the autopilot and yaw damper after trimming the airplane.

ICING FLIGHT

IN FLIGHT

WARNING

DUE TO DISTORTION OF THE WING AIRFOIL, ICE ACCUMULATION ON THE LEADING EDGES CAN CAUSE A SIGNIFICANT LOSS IN RATE OF CLIMB AND IN SPEED PERFORMANCE, AS WELL AS INCREASES IN STALL SPEED. EVEN AFTER CYCLING THE DEICE BOOTS, THE ICE ACCUMULATION REMAINING ON THE BOOTS AND UNPROTECTED AREAS OF THE AIRPLANE CAN CAUSE LARGE PERFORMANCE LOSSES. FOR THE SAME REASON, THE AURAL STALL WARNING SYSTEM MAY NOT BE ACCURATE AND SHOULD NOT BE RELIED UPON. UNDER THESE CONDITIONS, ESP AND AUTOPILOT UNDERSPEED PROTECTION MAY ALSO NOT BE ACCURATE AND SHOULD NOT BE RELIED UPON.

SHUTDOWN AND SECURING

These procedures should be conducted after the Battery and Generator Switches have been turned OFF in the AFM Shutdown and Securing checklist, and before the flight crew vacates the cockpit.

1. Standby Battery Switch ..... PRESS OFF
   a. Standby Battery Switch ..... [ARMED] and [ON] EXTINGUISHED
   b. Standby attitude fail flag ..... DISPLAYED
   c. Standby altimeter vibrator should not be heard (BAT – MASTER SWITCH OFF).

OTHER PROCEDURES

GTX 3000 TRANSPONDER

For airplanes equipped with GTX 3000 Transponders:

The GTX 3000 ADS-B OUT system has been shown to meet the requirements of 14 CFR 91.227. The ADS-B OUT system should be operational during all phases of flight, including airport surface movement operations.

The ADS-B OUT system is operational when the active transponder is in the ON or ALT modes. This will be indicated in the transponder window in the lower right corner of each PFD.

To place the GTX 3000 in ON or ALT Modes:

1. XPDR/TFC Softkey on PFD ..... PRESS
2. MODE Softkey ..... PRESS
3. ON or ALT Softkey ..... PRESS

TCAS II

For airplanes equipped with the GTS 8000 TCAS II system:

The GTS 8000 TCAS II system will normally transition between the appropriate STANDBY, TA ONLY and TA/RA modes automatically. During airport surface movement operations, the GTS 8000 will normally be in STANDBY Mode. The TCAS II should not be manually placed into TA ONLY or TA/RA mode during surface movement operations.

The TCAS II should be tested as part of cockpit preparation during preflight inspection. The G1000 systems should be operating in their normal mode prior to performing a TCAS II test. A successful TCAS test will result in the aural message “TACS II System Test Passed” being played, and no TCAS FAIL annunciations observed on the PFDs or MFD.

To test the GTS 8000 TCAS II from the PFD:

1. XPDR/TFC Softkey on PFD ..... PRESS
2. TCAS Softkey ..... PRESS
3. TEST Softkey ..... PRESS

To test the GTS 8000 TCAS II from the MFD:

1. View the MAP – TRAFFIC MAP page.
2. TEST Softkey ..... PRESS

NOTE

Use of the TCAS II system test function in flight will inhibit TCAS II until the test is completed.

AUTOPILOT OPERATION

Autopilot/Flight Director mode annunciations on the PFDs displayed in green indicate active autopilot/flight director modes. Annunciations displayed in white indicate armed autopilot/flight director modes. Normal mode transitions will flash inverse video green/black for 10 seconds before becoming steady green. Abnormal mode transitions will flash amber for 10 seconds before the default mode is annunciated as the active mode. Default autopilot/flight director modes are Pitch (PIT) and Roll (ROL) modes.

The XFR button on the mode control panel selects the navigation, attitude, and air data inputs the autopilot / flight director uses. Pressing the XFR button transfers these selections to the opposite side and causes the autopilot / flight director to drop selected lateral and vertical modes and engage the default PIT and ROL modes. The pilot must re-select the desired modes.

VERTICAL MODES

VERTICAL SPEED (VS) MODE

1. Altitude Preselect.....SET to Desired Altitude
2. Press VS Button .....GREEN 'VS', White 'ALTS' annunciated on PFD
3. Vertical Speed Reference.....ADJUST using UP / DN Wheel
4. Green 'ALT'.....VERIFY UPON ALTITUDE CAPTURE

FLIGHT LEVEL CHANGE (FLC) MODE

1. Altitude Preselect.....SET to Desired Altitude
2. Press FLC Button .....GREEN 'FLC', White 'ALTS' annunciated on PFD
3. AIRSPEED Reference.....ADJUST using UP / DN Wheel
4. Green 'ALT'.....VERIFY UPON ALTITUDE CAPTURE

NOTE

If the altitude preselect is not changed before selecting FLC, the autopilot may re-capture the current altitude immediately after entering FLC mode. Always ensure that the altitude preselect is adjusted prior to selecting FLC.

Pressing the SPD button while in FLC Mode toggles the airspeed reference between KIAS and Mach. FLC will automatically transition from Mach to KIAS reference during a descent when the current Mach reference equals 250 KIAS. FLC will not automatically transition from KIAS to a Mach reference during a climb.

ALTITUDE HOLD (ALT) MODE, MANUAL CAPTURE

1. At the desired altitude.....PRESS ALT Button on Mode Controller
2. Green 'ALT'.....VERIFY on PFD

If climbing or descending when the ALT button is pressed, the aircraft will overshoot the reference altitude and then return to it. The amount of overshoot will depend on the vertical speed when the ALT button is pressed.

ENROUTE AND TERMINAL VERTICAL NAVIGATION (VNAV)

VNAV Descent

Vertical navigation will only function when the navigation source is GPS navigation. VNAV will not function if the navigation source is VOR, Localizer, or ADF. The airplane's heading must be within 75° of the desired GPS course and within 10 NM cross track error in order for VNAV to function.

VNAV functions only for enroute and terminal descents. Vertical navigation is not available during climbs or descents between the final approach fix (FAF) and the missed approach point (MAP). Refer to the G1000 Cockpit Reference Guide and Pilot's Guide for additional information.

1. Once clearance from ATC has been received ..... RESET Altitude Preselect to the vertical clearance limit.
2. VNV Button ..... PRESS within 5 minutes of the top of descent (TOD)

NOTE

If the VNV button is pressed more than 5 minutes before the TOD or the altitude preselect is not reset to a lower altitude, VPTH will begin to flash inverse video, white/black, when the aural alert 'Vertical Track' annunciation sounds.

Pressing the VNV button and/or resetting the altitude preselect to a lower altitude cancels the flashing and the AFCS will capture and track the vertical profile.

If VNV button is not pressed, or the altitude preselect is not reset to a lower altitude, VPTH stops flashing at the TOD and the airplane will remain in ALT mode and not descend.

ALTV will be the armed vertical mode during the descent if the altitude preselect is set to a lower altitude than the VNAV reference altitude. This indicates the autopilot / flight director will capture the VNAV altitude reference. ALTS will be the armed mode during the descent if the altitude preselect is set at or above the VNAV reference altitude indicating that the autopilot / flight director will capture the altitude preselect altitude reference.

Vertical DIRECT TO

To descend from the present position to a waypoint:

1. Altitude Preselect ..... RESET
2. VNV Button ..... PRESS
3. Waypoint ..... SELECT desired waypoint
4. VNV ⊣D⊳ Softkey (MFD Flight Plan Page) ..... PRESS
5. Vertical DIRECT TO ..... ACTIVATE

LATERAL MODES

HEADING MODE (HDG)

1. HDG Knob ..... PUSH to synch heading bug to current heading
2. HDG BUTTON ..... PUSH , HDG mode annunciated
3. HDG Knob ..... Rotate to set heading bug to desired heading

NAVIGATION (VOR)

1. Navigation Source. ..... SELECT VOR1 or VOR2 using CDI softkey on PFD
2. Course Pointer ..... SET using CRS knob
3. Intercept Heading ..... ESTABLISH in HDG or ROL mode
4. Mode Controller ..... PRESS NAV on mode controller
5. VOR will be annunciated in WHITE if the mode is armed or in GREEN if the VOR is the active lateral mode.

NOTE

If the Course Deviation Indicator (CDI) is greater than one dot from center, the autopilot will arm the NAV mode and indicate VOR in white on the PFD. The pilot must ensure that the current heading will result in a capture of the selected course. If the CDI is one dot or less from center, the autopilot will enter the capture mode when the NAV button is pressed and annunciate VOR in green on the PFD.

NAVIGATION (GPS DIRECT TO)

1. Navigation Source ..... SELECT GPS Using the CDI Softkey on PFD
2. Select Waypoint..... PRESS the ~~D~~> button on the PFDs or GCU
   From the DIRECT TO page, activate DIRECT TO a waypoint.
3. Mode Controller ..... SELECT NAV on mode controller
   GPS will be annunciated in GREEN on the PFDs

NAVIGATION (GPS OBS Mode)

1. Navigation Source .....SELECT GPS using the CDI softkey on PFD
2. Select Waypoint..... PRESS the D→ button on the PFDs or GCU
   From the DIRECT TO page, activate DIRECT TO a waypoint.
3. OBS Softkey .....ON PFD, PRESS OBS softkey
4. Course Pointer.....SET using CRS knob
5. Intercept Heading .....ESTABLISH in HDG or ROL mode
6. Mode Controller .....SELECT NAV on mode controller
7. GPS will be annunciated in WHITE if the mode is armed or in GREEN if the GPS is the active lateral mode.

NOTE

If the Course Deviation Indicator (CDI) is greater than one dot from center, the autopilot will arm the NAV mode and indicate GPS in white on the PFD. The pilot must ensure that the current heading will result in a capture of the selected course. If the CDI is one dot or less from center, the autopilot will enter the capture mode when the NAV button is pressed and annunciate GPS in green on the PFD.

APPROACHES

The G1000 is capable of performing many tasks for the pilot to reduce pilot workload during the approach and landing phases of flight. The G1000 system references the Flight Plan to predict the pilot's intended actions. Time permitting, the pilot should keep the Flight Plan updated with the destination airport and the instrument approach to be flown. This will keep the G1000 from performing tasks associated with the approach procedures entered in the flight plan if the approach plan changes.

ILS

1. Load the approach into the Active Flight Plan..... VERIFY the G1000 tunes the proper ILS frequency
2. Approach Minimums.....SET on TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final

   a. Mode Control Panel .....PRESS HDG to fly ATC radar vectors

   b. PROC button on PFDs or MFD.....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. HSI CDI ..... VERIFY CDI automatically changes to LOC
      Course pointer slews to the front course

   d. Pathways..... AS DESIRED

   e. Mode Control Panel ..... PRESS APR, Verify LOC and GS armed

If Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix

   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D~~>) the IAF

   b. HSI CDI ..... SELECT GPS Nav Source

   c. Mode Control Panel ..... PRESS NAV (GPS Mode)

   d. Mode Control Panel ..... PRESS APR, Verify LOC and GS armed

NOTE

The airplane will navigate in GPS mode throughout the intermediate portion of the approach procedure. When the airplane is inbound towards the final approach course, the CDI will automatically switch from GPS navigation to LOC navigation.

   e. Pathways..... AS DESIRED

   f. VERIFY ..... Course pointer slews to the front course

4. Established inbound on Final Approach Course ..... SET Missed Approach Altitude
   In Altitude Preselect

5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)

6. VERIFY..... Airplane Captures and Tracks LOC and GS

7. At Decision Altitude (DA),

   a. A/P Y/D DISC TRIM INTRPT Switch ..... PRESS
   Continue visually for a normal landing

   Or

   b. GO AROUND button
   (on left power lever) .....PRESS, Execute Go Around Procedure

NOTE

For TAWS-A equipped aircraft: When executing a missed approach from an ILS approach, occasional Glideslope Deviation cautions may be received while establishing the missed approach climb, even if the aircraft is not below the ILS glideslope. This is caused by transitioning through ILS glideslope side lobe signals. If the Glideslope Deviation alert annunciates during the initial portion of the go-around, continue to execute the go-around procedure and fly the appropriate missed approach procedure.

ILS GLIDE SLOPE INOPERATIVE

1. Load the approach into the Active Flight Plan..... VERIFY the G1000 tunes the proper ILS frequency
2. Approach Minimums..... SET on TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final

   a. Mode Control Panel .....PRESS HDG to fly ATC radar vectors

   b. PROC button on PFDs or GCU .....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. HSI CDI ..... VERIFY CDI automatically changes to LOC
   Course pointer slews to the front course

   d. Pathways..... AS DESIRED

   e. Mode Control Panel ..... PRESS NAV, verify LOC armed

   Pressing the NAV button will arm the autopilot / flight director to capture Localizer and prevent Glideslope from arming or capturing if the glideslope is inoperative or out of service.

If Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix
   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D~~>) the IAF

   b. HSI CDI ..... SELECT GPS Nav Source

   c. Mode Control Panel ..... PRESS NAV (GPS Mode)

NOTE

The airplane will navigate in GPS mode throughout the intermediate portion of the approach procedure. When the airplane is inbound towards the final approach course, the CDI will automatically switch from GPS navigation to LOC navigation.

   d. Pathways..... AS DESIRED

   e. VERIFY ..... Course pointer slews to the front course

4. Established inbound on Final Approach Course (FAF Active Waypoint)
   a. VERIFY ..... Course Pointer is set to the final approach course

   b. VERIFY ..... LOC is annunciated on the HSI

5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)

6. At the FAF.....Use desired vertical mode to fly the approach's vertical profile
   Use Altitude Preselect to level off at intermediate altitudes and at the MDA

NOTE

It is recommended to descend at 1000 ft/min or less. Descending at a higher rate or reaching MDA too far before the Visual Descent Point (VDP) could cause TAWS or GPWS alerts. If a TAWS or GPWS WARNING is issued, immediately follow the TAWS OR GPWS WARNING procedure in the EMERGENCY PROCEDURES Section of this AFMS.

7. After Leveling at MDA.....SET Missed Approach Altitude In Altitude Preselect

RNAV (GPS) or RNAV (GNSS) (LPV or LNAV/VNAV)

1. Load the approach into the Active Flight Plan.
2. Approach Minimums.....SET ON TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final
   a. Mode Control Panel .....PRESS HDG to fly ATC radar vectors
   b. PROC button on PFDs or MFD.....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. VERIFY ..... Course pointer slews to the front course
   d. Pathways..... AS DESIRED
   e. Mode Control Panel ..... PRESS APR, Verify GPS and GP armed

If Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix
   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D~~>) the IAF

   b. HSI CDI ..... SELECT GPS Nav Source
   c. Mode Control Panel ..... PRESS APR, Verify GPS mode active, GP armed
   d. Pathways..... AS DESIRED
   e. VERIFY ..... Course pointer slews to the front course

4. Established inbound on Final Approach Course
   a. VERIFY ..... Course Pointer is set to the final approach course
   b. VERIFY .....LPV or L/VNAV is annunciated on the HSI
   c. VERIFY ..... GP Indicator Displays
   d. VERIFY ..... SUSP is not displayed on HSI
   e. SET .....Missed Approach Altitude In Altitude Preselect
5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)
6. VERIFY.....Airplane Captures and Tracks GPS Course and GP
7. At Decision Altitude (DA):
   a. A/P Y/D DISC TRIM INTRPT Switch .....PRESS
      Continue visually for a normal landing

      Or

   b. GO AROUND button
      (on left power lever) .....PRESS, Execute Go Around Procedure

NOTE

If SBAS is unavailable before conducting an LNAV/VNAV approach, the G1000 will revert to baro VNAV operation with automatic temperature compensation on the final approach segment. The baro VNAV glidepath may be intercepted and flown in the same manner as an SBAS generated glidepath. Refer to the G1000 Pilot's Guide, 190-01343-01 Revision A or later, for additional information on manually applying temperature compensation to other segments of an approach and approach minima.

RNAV (GPS) or RNAV (GNSS) - (LNAV, LP, LNAV + V)

1. Load the approach into the Active Flight Plan.
2. Approach Minimums.....SET ON TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final
   a. Mode Control Panel .....PRESS HDG to fly ATC radar vectors
   b. PROC button on PFDs or MFD.....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. VERIFY ..... Course pointer slews to the inbound course
   d. Pathways..... AS DESIRED
   e. Mode Controller.....PRESS APR Button
      GPS will be the active lateral mode,
      GP will ARM if the procedure provides a glidepath

If Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix
   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D~~>) the IAF
   b. HSI CDI ..... SELECT GPS Nav Source
   c. Mode Controller.....PRESS APR Button
      GPS will be the active lateral mode,
      GP will ARM if the procedure provides a glidepath
   d. Pathways..... AS DESIRED

4. Established inbound on Final Approach Course (FAF Active Waypoint)
   a. VERIFY .....Course Pointer is set to the final approach course
   b. VERIFY .....LNAV+V or LNAV is annunciated on the HSI
   c. VERIFY .....GP Deviation Scale Displays (if applicable)
   d. PRESELECT .....Minimum Descent Altitude (MDA)

5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)

NOTE

Some RNAV (GPS) or (GNSS) approaches provide a vertical descent angle as an aid in flying a stabilized approach. These approaches are NOT considered Approaches with Vertical Guidance (APV). Approaches that are annunciated on the HSI as LNAV or LNAV+V are considered Nonprecision Approaches (NPA) and are flown to an MDA even though vertical glidepath (GP) information may be provided. Approaches that are annunciated on the HSI as LP will not have vertical glidepath (GP) information provided.

6. At the FAF..... Descend via GP if LNAV+V approach
   Use desired vertical mode to fly the approach's vertical profile if LNAV approach
   Use Altitude Preselect to level off at intermediate altitudes and at the MDA

NOTE

It is recommended to descend at 1000 ft/min or less. Descending at a higher rate or reaching MDA too far before the Visual Descent Point (VDP) could cause TAWS or GPWS alerts. If a TAWS or GPWS WARNING is issued, immediately follow the TAWS OR GPWS WARNING procedure in the EMERGENCY PROCEDURES Section of this AFMS.

CAUTION

The autopilot/flight director will not capture ALT if descending in GP mode.

7. Level airplane in ALT mode at MDA..... PRESS NAV button 200 ft above MDA

   If airplane is descending via GP, GP will extinguish and PIT mode will be active and airplane will capture MDA.

8. AFTER LEVELING AT MDA.....SET Missed Approach Altitude In Altitude Preselect

VOR APPROACH

1. Load the approach into the Active Flight Plan ..... VERIFY the G1000 tunes the proper VOR frequency
2. Approach Minimums .....SET ON TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final
   a. Mode Control Panel .....PRESS HDG to fly ATC radar vectors
   b. PROC button on PFDs or GCU .....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. HSI CDI .....PRESS until VOR navigation source To be used for the approach displays
   d. Course Pointer .....Set to inbound course (if not already set)
   e. Mode Control Panel .....PRESS APR, verify VAPP armed

If Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix:
   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D>~~) the IAF

   b. HSI CDI ..... SELECT GPS

   c. Mode Control Panel ..... PRESS NAV (GPS mode)

   d. Pathways..... AS DESIRED

   e. When Established Inbound to the FAF ..... PRESS CDI softkey until VOR navigation source to be used for the approach displays (Autopilot / Flight Director Mode will automatically change to ROL)

   f. Course Pointer ..... Set to inbound course (if not already set)

   g. Mode Control Panel ..... PRESS APR, verify VAPP active or armed

4. Established Inbound on Final Approach Course:
   a. VERIFY .....Course Pointer is set to the inbound course

   b. VERIFY .....VOR is annunciated on the HSI

NOTE

If the Course Deviation Indicator (CDI) is greater than one dot from center, the autopilot will arm the VAPP mode and indicate VAPP in white on the PFD. The pilot must ensure that the current heading will result in a capture of the selected course. If the CDI is one dot or less from center, the autopilot will enter the capture mode when the APR button is pressed and annunciate VAPP in green on the PFD.

5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)

6. At the FAF.....Use desired vertical mode to fly the approach's vertical profile
   Use Altitude Preselect to level off at intermediate altitudes and at the MDA

NOTE

It is recommended to descend at 1000 ft/min or less. Descending at a higher rate or reaching MDA too far before the Visual Descent Point (VDP) could cause TAWS or GPWS alerts. If a TAWS or GPWS WARNING is issued, immediately follow the TAWS OR GPWS WARNING procedure in the EMERGENCY PROCEDURES Section of this AFMS.
.

7. AFTER LEVELING AT MDA.....SET Missed Approach Altitude In Altitude Preselect

BACK COURSE (BC)

1. Load the approach into the Active Flight Plan ..... VERIFY the G1000 tunes the proper LOC frequency
2. Approach Minimums .....SET ON TMR/REF page (if not already set)

If Flying Vectors-To-Final:

3. Airplane on Vectors-To-Final
   a. Mode Control Panel ..... PRESS HDG to fly radar vectors
   b. PROC button on PFDs or MFD.....SELECT 'ACTIVATE VECTORS-TO-FINAL'

NOTE

SUSP may annunciate on the HSI when Vectors-To-Final is selected. The flight plan will automatically un-suspend when the airplane intercepts and turns inbound on the final approach course. When automatic flight plan waypoint sequencing resumes, SUSP will extinguish.

   c. HSI CDI ..... PRESS until LOC Navigation Source to be used for the Approach Displays
   d. VERIFY .....Course Pointer is Set to the Front Course
   e. Mode Control Panel ..... PRESS BC
      Verify BC mode is armed

IF Flying Full Approach Including Transition:

3. Airplane cleared to an initial approach fix:
   a. ACTIVATE THE APPROACH from the PROC page,

      Or

      ACTIVATE a DIRECT TO (~~D~~>) the IAF
   b. HSI CDI ..... SELECT GPS
   c. Mode Control Panel ..... PRESS NAV (GPS Mode)
   d. Pathways..... AS DESIRED
   e. When Established Inbound to the FAF ..... PRESS CDI softkey until LOC navigation source to be used for the approach displays
      (Autopilot / Flight Director Mode will automatically change to ROL)
   f. VERIFY ..... Course Pointer is set to the Front Course
   g. Mode Control Panel ..... PRESS BC
      Verify BC mode is armed or active
4. Established inbound on Final Approach Course:
   a. VERIFY ..... Course Pointer is set to the front course
   b. VERIFY ..... LOC is annunciated on the HSI

NOTE

If the Course Deviation Indicator (CDI) is greater than one dot from center, the autopilot will arm the BC mode and indicate BC in white on the PFD. The pilot must ensure that the current heading will result in a capture of the selected course. If the CDI is one dot or less from center, the autopilot will enter the capture mode when the APR button is pressed and annunciate BC in green on the PFD.

5. Airspeed.....MAINTAIN 120 KIAS OR GREATER (Recommended)
6. At the FAF.....Use desired vertical mode to fly the approach's vertical profile
   Use Altitude Preselect to level off at intermediate altitudes and at the MDA

NOTE

It is recommended to descend at 1000 ft/min or less. Descending at a higher rate or reaching MDA too far before the Visual Descent Point (VDP) could cause TAWS or GPWS alerts. If a TAWS or GPWS WARNING is issued, immediately follow the TAWS OR GPWS WARNING procedure in the EMERGENCY PROCEDURES Section of this AFMS.

7. AFTER LEVELING AT MDA.....SET Missed Approach Altitude In Altitude Preselect

GO AROUND (GA)

1. Control Wheel..... GRASP FIRMLY
2. GO AROUND button (left power lever) .....PUSH – Verify GA / / GA on PFD in lateral and vertical mode fields
3. Rotate to Go Around attitude.....Follow Flight Director Command Bars
4. Balked Landing.....EXECUTE
5. Mode Control Panel.....PRESS NAV to Fly Published Missed Approach Procedure
   PRESS HDG to Fly ATC Assigned Missed Approach Heading

NOTE

The pilot is responsible for initial missed approach guidance in accordance with published procedure. The G1000 may not provide correct guidance until the aircraft is established on a defined leg of the procedure.

6. Altitude Preselect.....VERIFY Set to appropriate altitude

At An Appropriate Safe Altitude:

7. Mode Control Panel.....AP to Engage Autopilot

NOTE

When the GA button is pressed, the Flight Director command bars will command 8° nose up and wings level, the HSI nav source automatically switches to GPS, the flight plan sequences to the first published missed approach leg, and automatic leg sequencing resumes. The autopilot will disconnect if the ESP option is not installed. If ESP is installed, the autopilot will not disconnect with a GA button press. The AFCS will fly the published missed approach procedure once the aircraft is established on a segment of the missed approach procedure, the autopilot is engaged, and NAV mode is selected.

The flight plan can only contain one approach procedure at a time. If the pilot attempts to load another instrument approach at this time, the airplane will depart from the missed approach procedure and turn directly towards the first waypoint in the new approach. Do not attempt to load or activate a new approach while flying the missed approach procedure until ready to fly the new approach.

Recommended Procedures Following a Missed Approach:

1. To repeat the instrument approach procedure currently loaded into the flight plan:
    a. Activate Vectors-To-Final if being radar vectored by ATC,

    Or

    b. If flying the entire instrument approach procedure, activate a DIRECT TO the desired initial waypoint. Follow the appropriate procedure for the instrument approach being flown.

2. To proceed to an alternate airport (This procedure will allow the pilot to enter the route to the alternate before leaving the missed approach holding fix):
    a. Highlight the first enroute waypoint in the flight plan
    b. Begin entering waypoints in the desired route order. Do not attempt to load a new approach at this time.
    c. CLR all waypoints after the last waypoint in the route to the alternate and the currently loaded instrument approach header.
    d. When ready to proceed to the alternate, highlight the first enroute waypoint in the route to the alternate airport. ACTIVATE a DIRECT TO that waypoint.
    e. When enroute to the alternate, a new instrument approach may be loaded into the flight plan.

AUTOPILOT COUPLED GO AROUND (GA) (ESP Equipped Airplanes Only)

1. Control Wheel ..... GRASP FIRMLY
2. GO AROUND button (left power lever) ..... PUSH – Verify GA / / GA on PFD in lateral and vertical mode fields, **autopilot will not disengage**.
3. Autopilot ..... VERIFY airplane pitches up following flight director command bars
4. Balked Landing ..... EXECUTE
5. Mode Control Panel ..... PRESS NAV to Fly Published Missed Approach Procedure
   PRESS HDG to Fly ATC Assigned Missed Approach Heading

NOTE

The pilot is responsible for initial missed approach guidance in accordance with published procedure. The G1000 may not provide correct guidance until the airplane is established on a defined leg of the procedure.

6. Altitude Preselect ..... VERIFY Set to appropriate altitude

NOTE

In ESP equipped airplanes, when the GA button is pressed the Flight Director command bars will command 8° nose up and wings level, the HSI nav source automatically switches to GPS, the flight plan sequences to the first published missed approach leg, and automatic leg sequencing resumes. The autopilot will remain engaged, and fly the published missed approach procedure once the airplane is established on a segment of the missed approach procedure and NAV mode is selected.

The flight plan can only contain one approach procedure at a time. If the pilot attempts to load another instrument approach at this time, the airplane will depart from the missed approach procedure and turn directly towards the first waypoint in the new approach. Do not attempt to load or activate a new approach while flying the missed approach procedure until ready to fly the new approach.

Recommended Procedures Following a Missed Approach:

1. To repeat the instrument approach procedure currently loaded into the flight plan:
   a. Activate Vectors-To-Final if being radar vectored by ATC,

   Or

   b. If flying the entire instrument approach procedure, activate a DIRECT TO the desired initial waypoint. Follow the appropriate procedure for the instrument approach being flown.

2. To proceed to an alternate airport (This procedure will allow the pilot to enter the route to the alternate before leaving the missed approach holding fix):
   a. Highlight the first enroute waypoint in the flight plan
   b. Begin entering waypoints in the desired route order. Do not attempt to load a new approach at this time.
   c. CLR all waypoints after the last waypoint in the route to the alternate and the currently loaded instrument approach header.
   d. When ready to proceed to the alternate, highlight the first enroute waypoint in the route to the alternate airport. ACTIVATE a DIRECT TO that waypoint.
   e. When enroute to the alternate, a new instrument approach may be loaded into the flight plan.

SYNTHETIC VISION

Use of Pathways

If Synthetic Terrain is displayed on the PFD, the Pathways may be used to assist the pilot's awareness of the programmed lateral and vertical navigation path. The following sections describe the basic use of the Pathways in various flight segments. For more detailed information, consult the G1000 Pilot's Guide.

Departure

Prior to departure, load and activate the desired flight plan into the G1000 FMS, set the initial altitude on the G1000 altitude selector and select GPS on the HSI display just as you would without the SVS system.

The programmed flight path will be displayed as a series of magenta boxes along the path at the flight plan altitude subject to the following conditions;

- If the first segment of the flight plan is a heading to altitude leg, the Pathway will not be displayed for that segment. The first Pathway segment displayed will be the first GPS course leg.
- The Pathway must be within the SVS field of view of 30 degrees left and 35 degrees right. If the programmed path is outside that field of view, the Pathways will not be visible on the display until the aircraft has turned toward the course.
- The Pathway will be displayed at either the altitude selected on the G1000 selector OR the altitude published for the procedure (e.g. SID) WHICHEVER IS HIGHER.

After departure, the primary aircraft control must be by reference to the primary aircraft instruments. The SVS and Pathway displays should be used to aid in awareness of the terrain and programmed flight path.

Prior to intercepting the programmed course, the Pathway will be displayed as a series of magenta "boxes" with pointers at each corner that point in the direction of the programmed course. The Pathway boxes will not be displayed on portions of the course line that would lead the pilot to intercept the course in the wrong direction.

As the aircraft approaches the center of the programmed course and altitude, the number of Pathway boxes will decrease to a minimum of four.

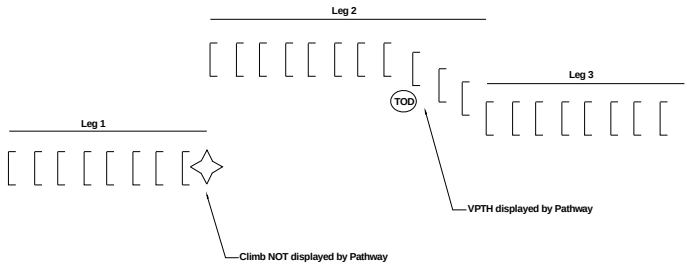
Enroute

When enroute, the Pathway will be displayed along the lateral path defined by the flight plan, at the altitude selected on the G1000 altitude selector.

Flight plan changes in altitude that require a climb will be indicated by the Pathway being displayed as a level path at the altitude entered for the current flight plan leg. Because the G1000 system does not have information available to it about aircraft performance, climb profiles are not displayed by the Pathway.

If the programmed flight plan includes one or more defined VNAV descent segments, the descent path(s) will be displayed by the Pathway as prompted by the G1000 FMS.

If the flight plan includes a significant change in course at a waypoint, the Pathway boxes toward the currently active waypoint will be magenta in color. The boxes defining the next flight plan segment may be visible, but will be displayed in a white color.



Enroute Pathway Altitude Display

Approach

During an approach transition with the GPS CDI active, the Pathway will be displayed along the lateral path defined by the flight plan, at the altitude selected on the G1000 altitude selector. Pathway will be displayed at least up to the Final Approach Fix on all instrument approach procedures.

For ILS, LNAV/VNAV, LNAV+V and LPV approaches, the Pathway will display the lateral and vertical descent segments from the glideslope or glidepath intercept altitude, down to the Decision Altitude. For all other non-precision approaches, Pathway will not display beyond the Final Approach Fix until the missed approach segment become active.

In all cases, the pilot must still ensure that the aircraft complies with the requirements of the published instrument approach procedure.

Missed approach

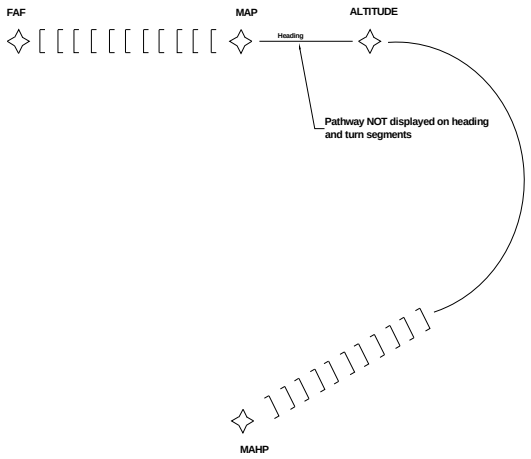
When the missed approach is selected on the G1000 FMS, the Pathway to the Missed Approach Holding Point will be displayed just as described for the departure segment.

The pilot must assure that the aircraft path will, at all times, comply with the requirements of the published missed approach procedure.

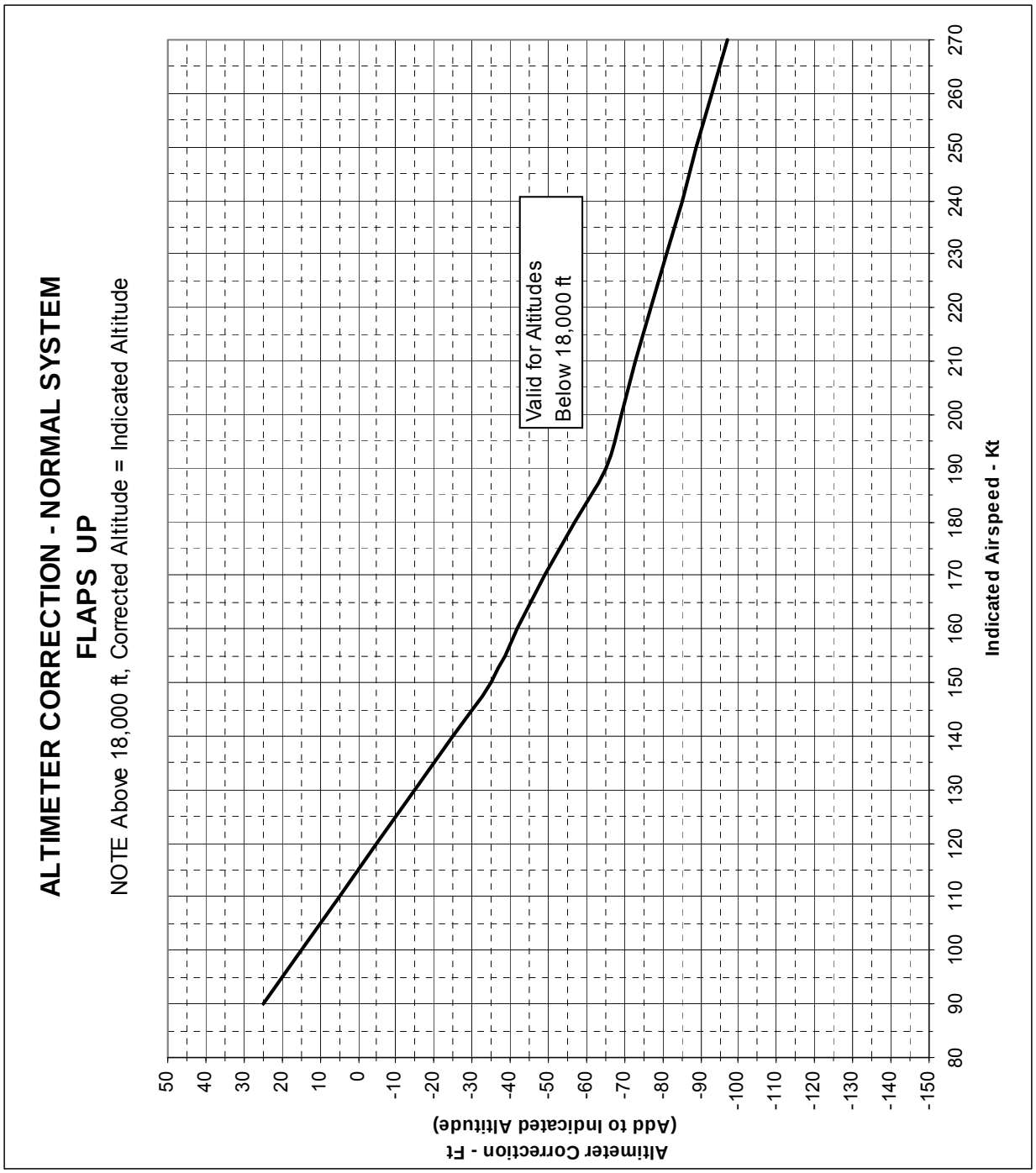
If the initial missed approach leg is heading-to-altitude or a leg defined by other than a GPS course, the Pathway will not be displayed for that segment.

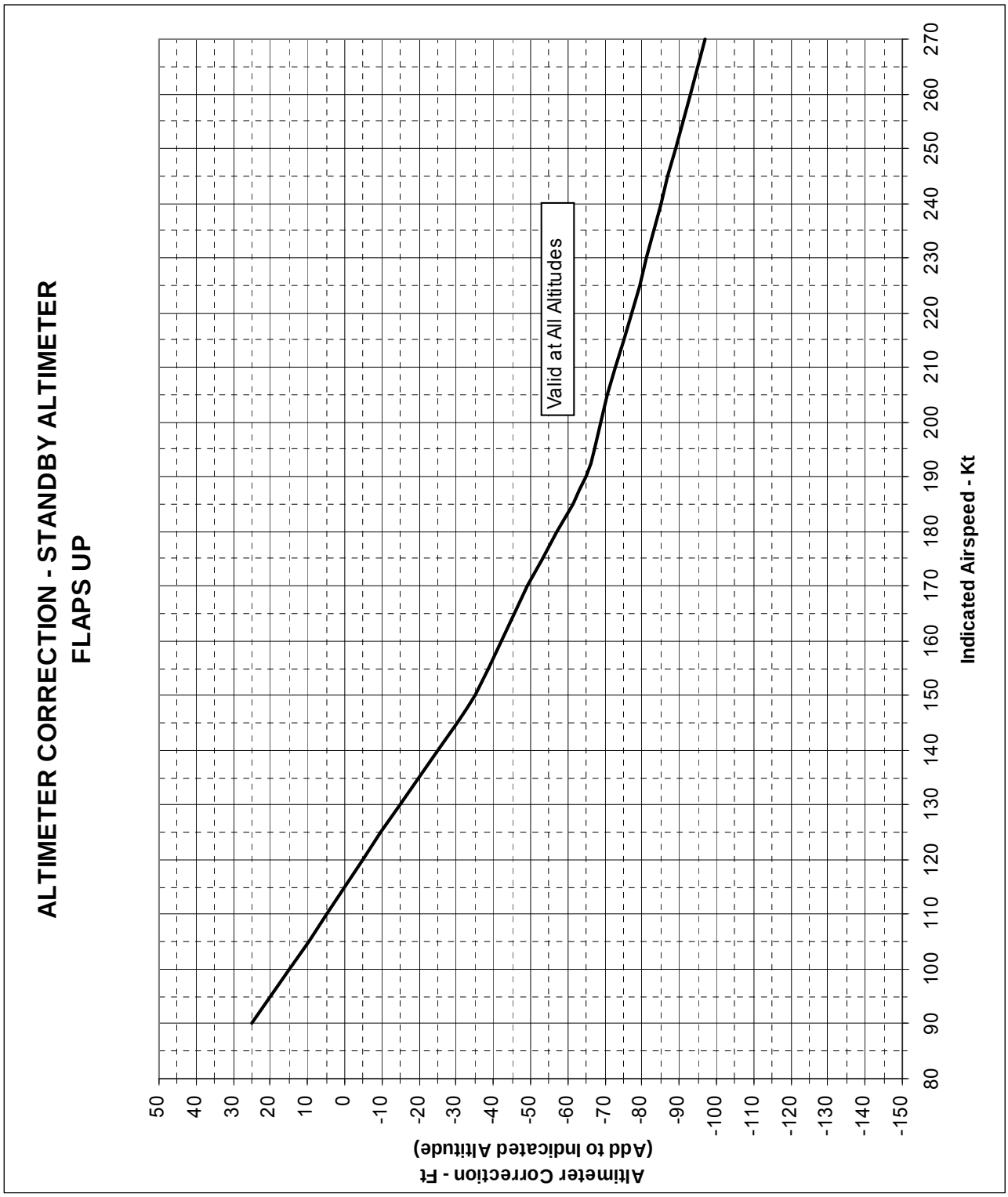
If the course to the Missed Approach Holding Point is out of the SVS field of view during the initial missed approach climb, the Pathway will not be visible on the PFD until the aircraft is turned toward the course.

The Pathway will be displayed at the published missed approach altitude OR the altitude set on the G1000 altitude selector WHICHEVER IS HIGHER. If the G1000 altitude selector is set to MDA on the final approach segment and not reset during the initial missed approach, the Pathway will still be displayed at the published missed approach altitude.



Missed Approach Pathway Display


ALTIMETER CORRECTION - NORMAL SYSTEM
FLAPS UP
NOTE Above 18,000 ft, Corrected Altitude = Indicated Altitude
Valid for Altitudes
Below 18,000 ft
Altimeter Correction - Ft
(Add to Indicated Altitude)
50 40 30 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100 -110 -120 -130 -140 -150
Indicated Airspeed - Kt
80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270


ALTIMETER CORRECTION - STANDBY ALTIMETER
FLAPS UP
Valid at All Altitudes
Altimeter Correction - Ft
(Add to Indicated Altitude)
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
Indicated Airspeed - Kt

Section 6 - Weight and Balance

No Change. Refer to basic Aircraft Flight Manual or appropriate supplement.

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Section 7 - Systems Description

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GENERAL

This section supplements the Systems Description chapter in the aircraft's original Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. This section will follow the format and layout of the chapter in the original manual. Only topics changed by the installation of the G1000 integrated avionics system will be addressed in this supplement.

The G1000 system is an integrated system that presents flight instrumentation, navigation, communication, weather avoidance, engine instrumentation, and supplemental flight information to the pilot for enhanced situational awareness through large-format displays. The G1000 also incorporates an automatic flight control system that includes autopilot and flight director functions, as well as an optional Electronic Stability & Protection (ESP) system. Refer to the GARMIN Pilot's Guide and Cockpit Reference Guide, P/N 190-01343-01 and 190-01344-01 Rev. A or later FAA accepted revision for detailed descriptions of the GARMIN G1000 system including its components, detailed descriptions of functions, and operating instructions.

G1000 INTEGRATED AVIONICS

SYSTEM OVERVIEW

The main components of the G1000 Integrated Avionics system consists of 14 Line Replaceable Units (LRU)s. Seven of those LRUs are mounted in the cockpit and interface the pilot to the G1000 system. There are two Primary Flight Displays (PFDs) that display primary flight information to the pilot, including attitude, airspeed, altitude, heading, vertical speed, navigation information, system information, and pilot situational awareness information. In the center of the cockpit, a 15 inch Multi-Function Display (MFD) displays engine gauges, flight plan data, various map displays, and access to aviation and weather information. Information access and data entry through the MFD is via the GCU 477 MFD controller mounted in the pedestal between the pilot and copilot seats.

Communications are interfaced through the PFDs and two audio panels mounted outside each PFD. Radio tuning controlled through both PFDs and the GCU 477 controller. Audio levels for the Com and Nav radios, ADF, intercom, and XM music are controlled by the two audio panels.

The G1000 incorporates a fully digital integrated autopilot and flight director. Pilot interface to the AFCS is through the GMC 710 Autopilot Mode controller mounted in the center of the cockpit just below the airplane's glareshield.

In addition to dual Primary Flight Displays, the system incorporates dual Air Data Computers (GDC), Dual AHRS (GRS), and Dual Integrated Avionics (GIA) units for system redundancy. Each GIA contains a VHF Com radio, a VHF Nav radio, Glide Slope receiver, Marker Beacon receiver, and a SBAS augmented GPS receiver.

Finally, the G1000 system includes weather radar and satellite downlinked weather information for weather avoidance and situational awareness.

INSTRUMENT PANEL

The G1000 Instrument Panel consists of two 10 inch LCD Primary Flight Displays, one 15 inch LCD Multi-Function Display, two audio panels, autopilot / flight director mode control panel, an MFD controller, and three 2 ¼ inch standby instruments. The ADF control head was relocated from the radio stack location on the instrument panel to the pedestal.

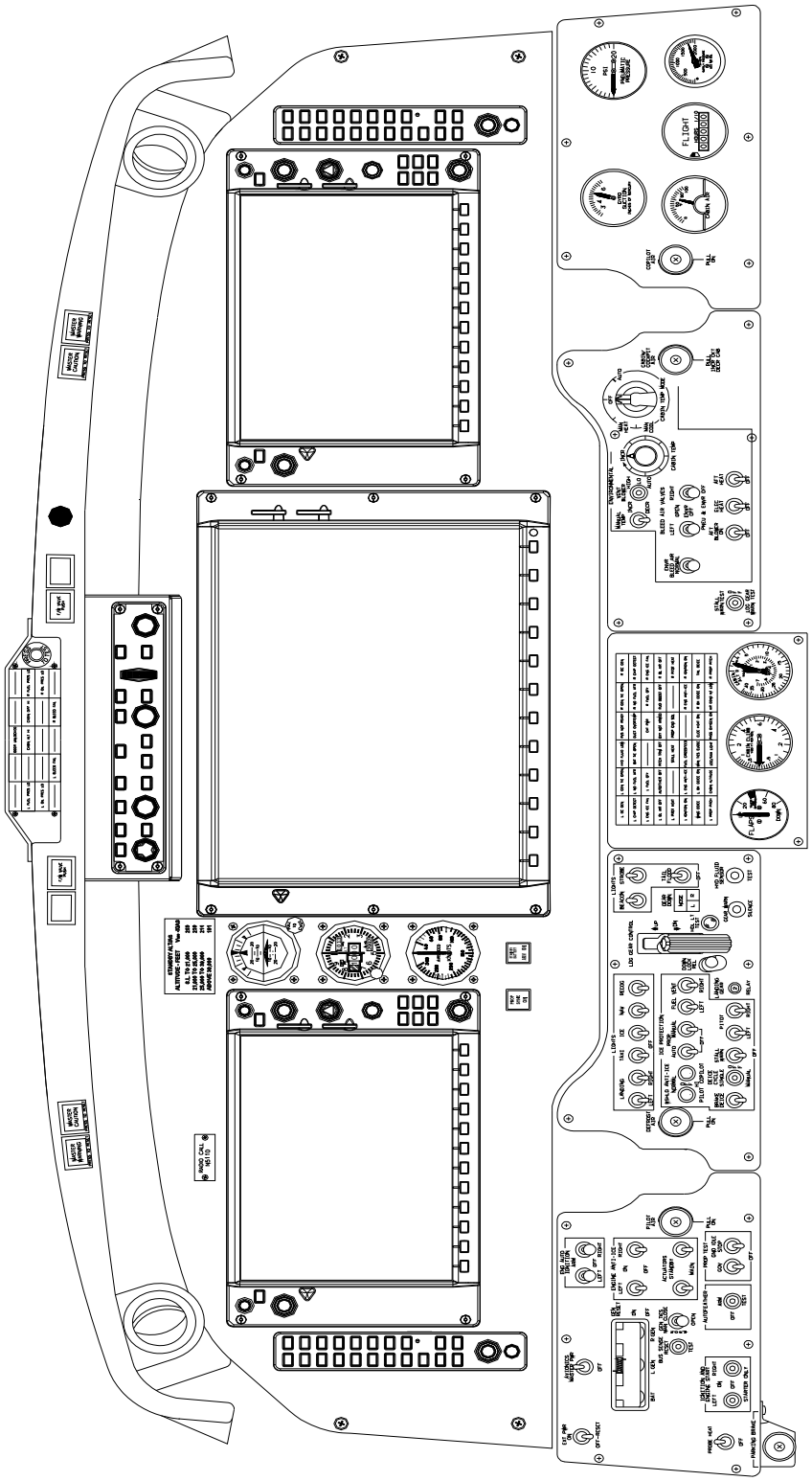


Figure 2, Instrument Panel

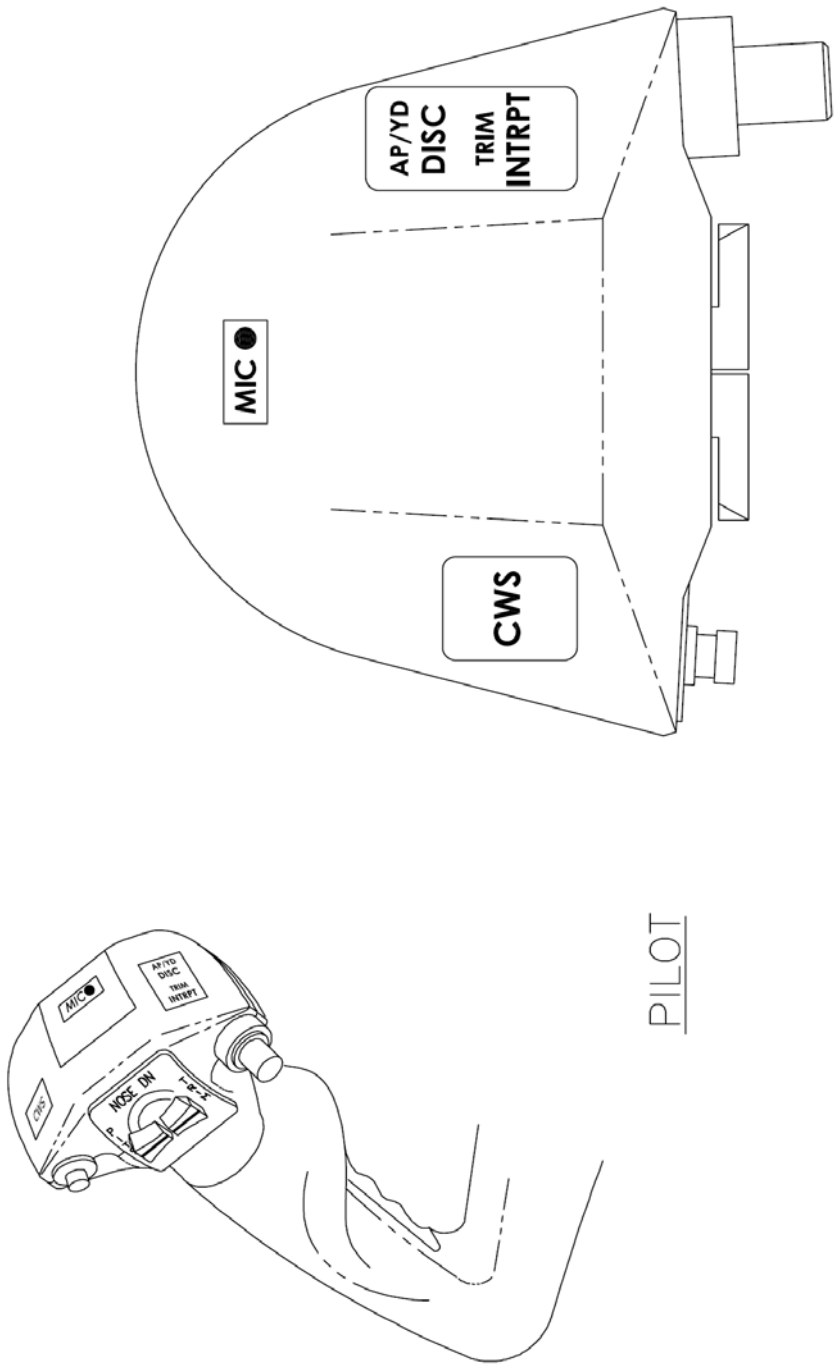


Figure 3, Pilot's Control Wheel

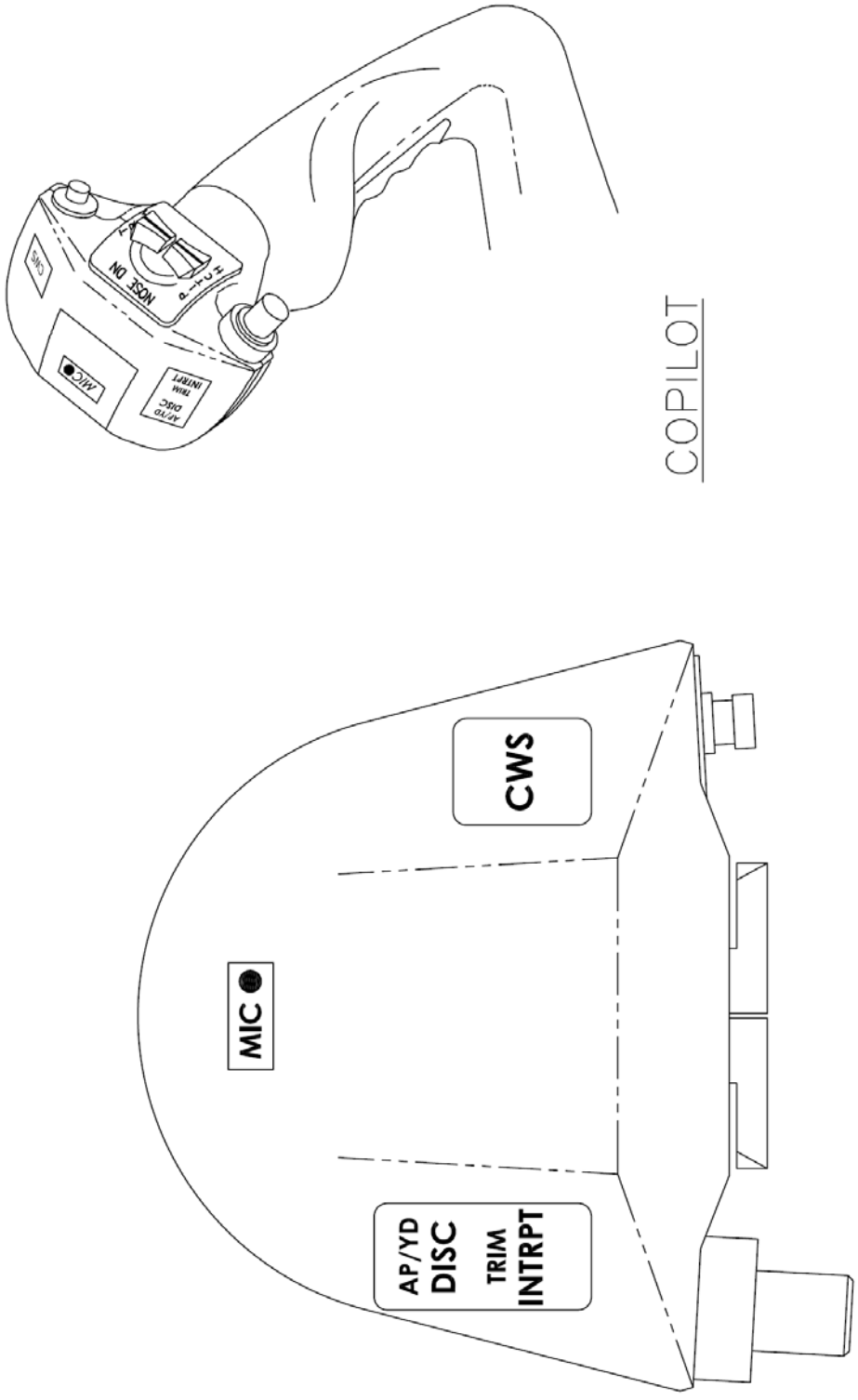


Figure 4, Copilot's Control Wheel With Trim Switches

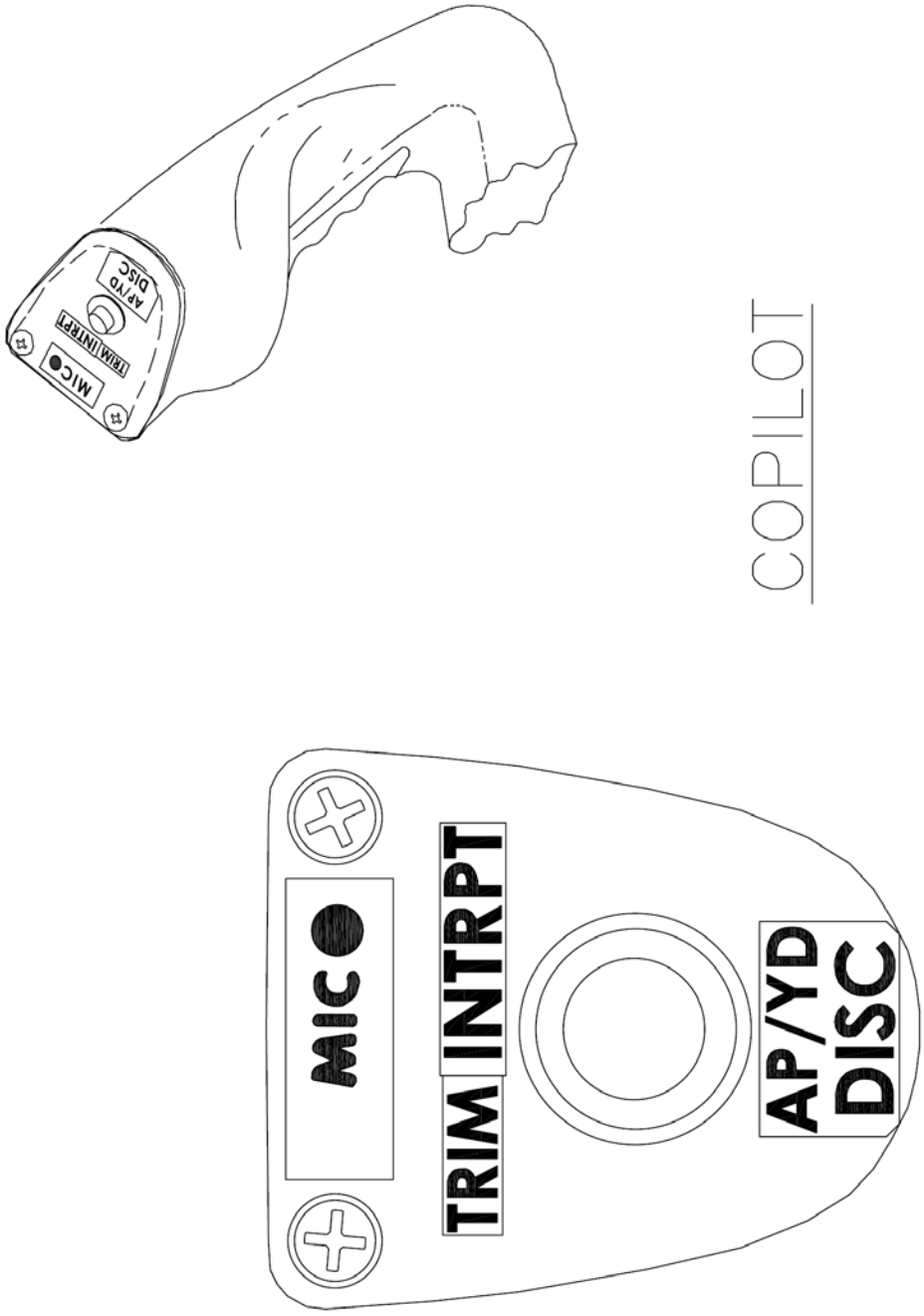


Figure 5, Copilot's Control Wheel Without Trim Switches

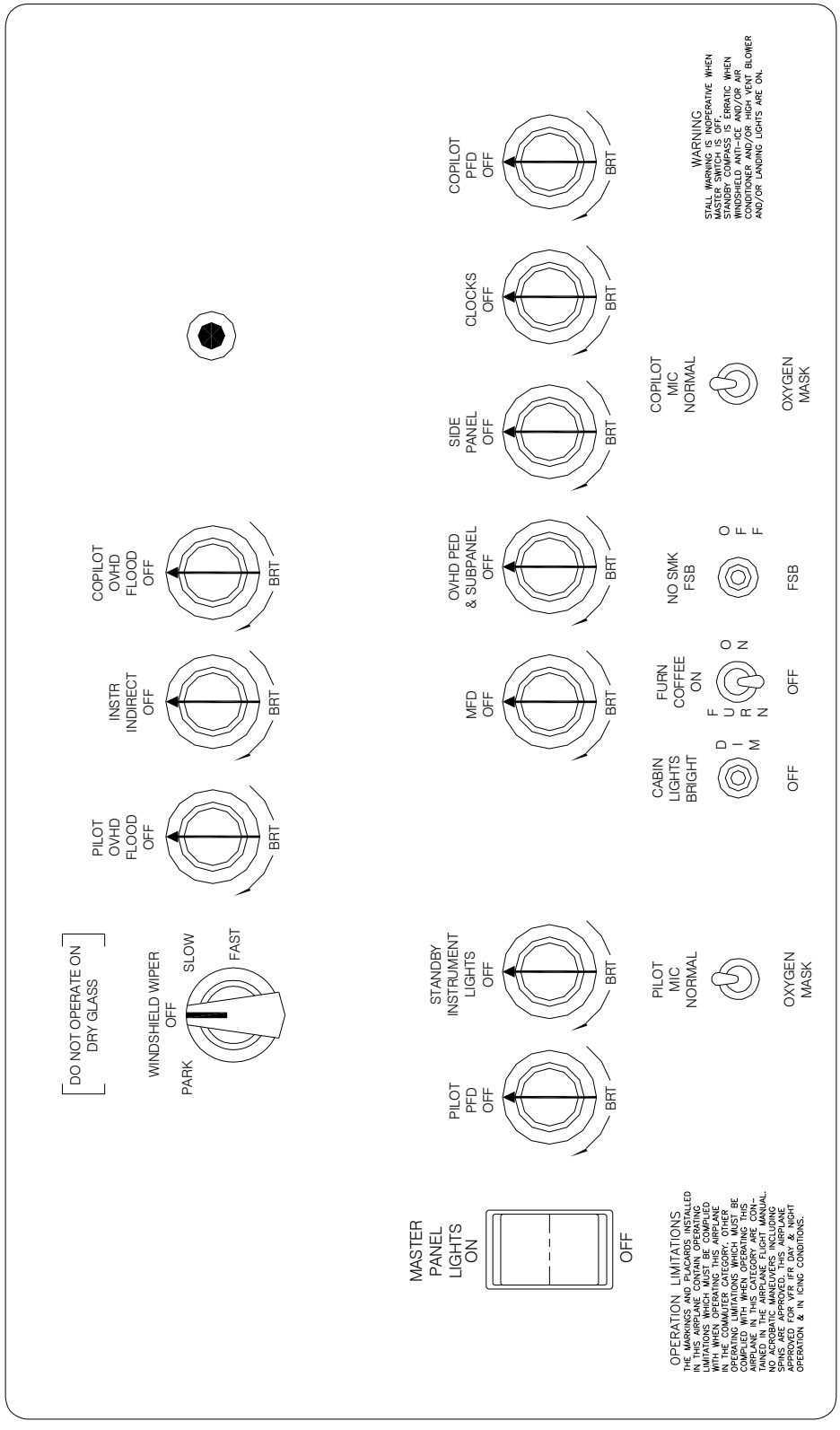

DO NOT OPERATE ON DRY GLASS
WINDSHIELD WIPER
OFF
SLOW
FAST
PARK
PILOT OVHD FLOOD OFF BRT
INSTR INDIRECT OFF BRT
COPILOT OVHD FLOOD OFF BRT
MFD OFF BRT
OVHD PED & SUBPANEL OFF BRT
SIDE PANEL OFF BRT
CLOCKS OFF BRT
COPILOT PFD OFF BRT
STANDBY INSTRUMENT LIGHTS OFF BRT
PILOT PFD OFF BRT
CABIN LIGHTS BRIGHT DIM
FURN COFFEE ON FURN OFF
NO SMK FSB
OFF OFF
FSB
PILOT MIC NORMAL
OXYGEN MASK
COPILOT MIC NORMAL
OXYGEN MASK
MASTER PANEL LIGHTS ON OFF
WARNING
STALL WARNING IS INOPERATIVE WHEN MASTER SWITCH IS OFF.
STANDBY COMPASS IS ERRATIC WHEN WINDSHIELD ANTI-ICE AND/OR AIR CONDITIONER AND/OR HIGH VENT BLOWER AND/OR LANDING LIGHTS ARE ON.
OPERATION LIMITATIONS
THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE COMMUTER CATEGORY. OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED IN THE AIRPLANE FLIGHT MANUAL. WHEN ACCESSORIES APPROVED FOR THIS AIRPLANE ARE INSTALLED, THE APPROVED LIMITATIONS INCLUDING SUPPLEMENTS ARE APPROVED FOR VFR DAY & NIGHT OPERATION & IN ICING CONDITIONS.

Figure 6, Overhead Panel

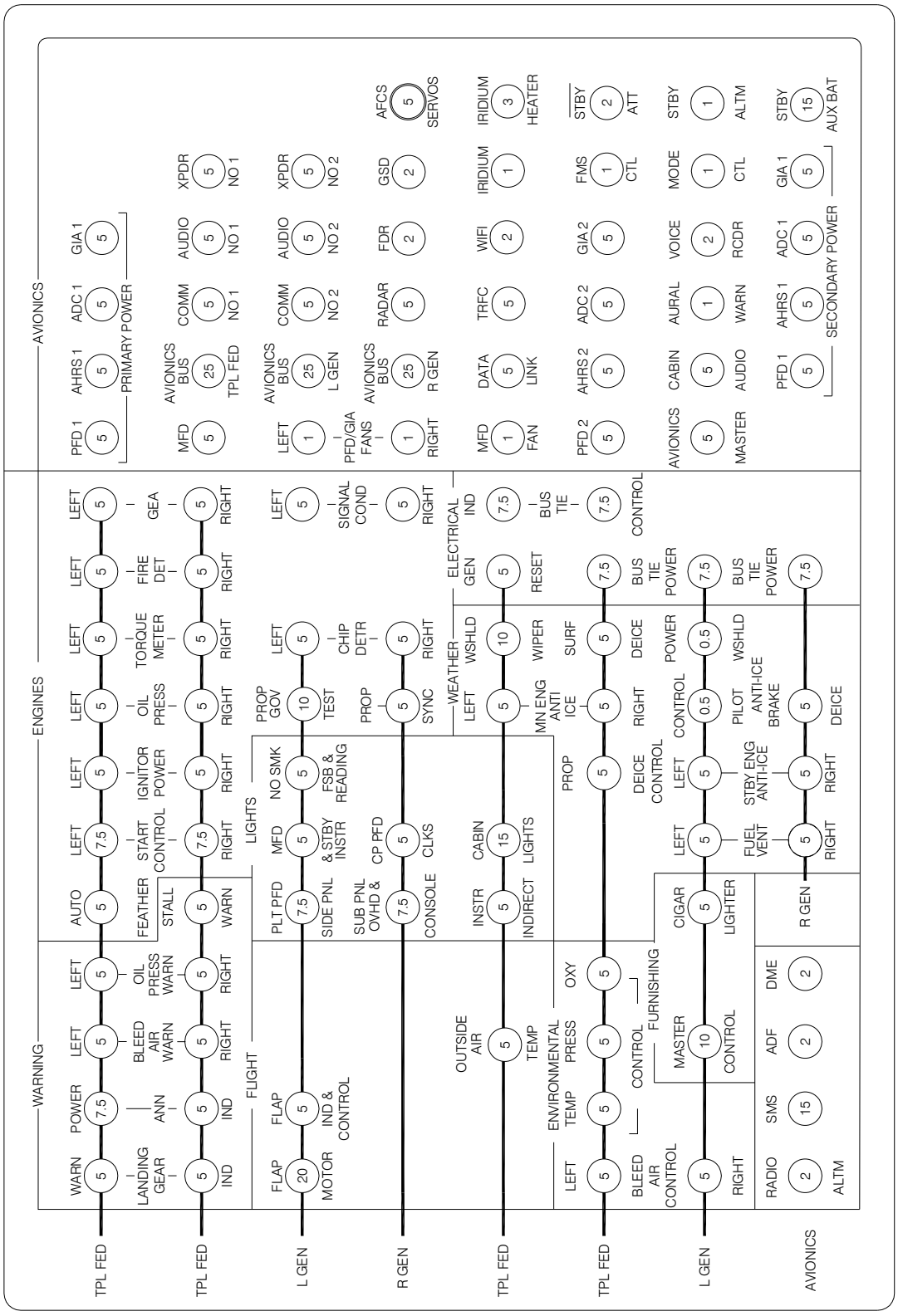


Figure 7, Right Side Circuit Breaker Panel

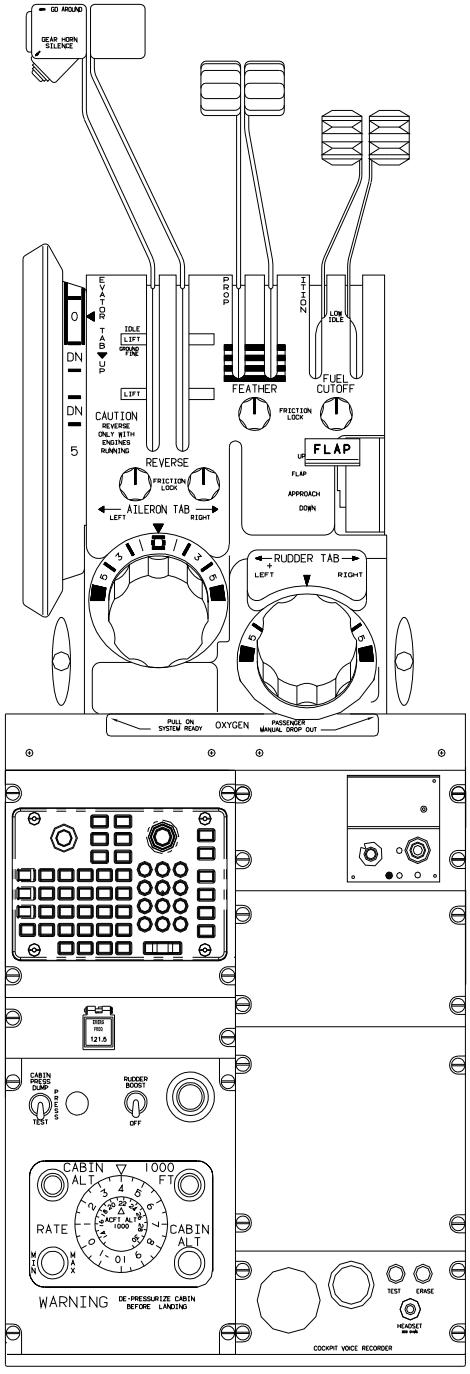


Figure 8, Pedestal Configuration

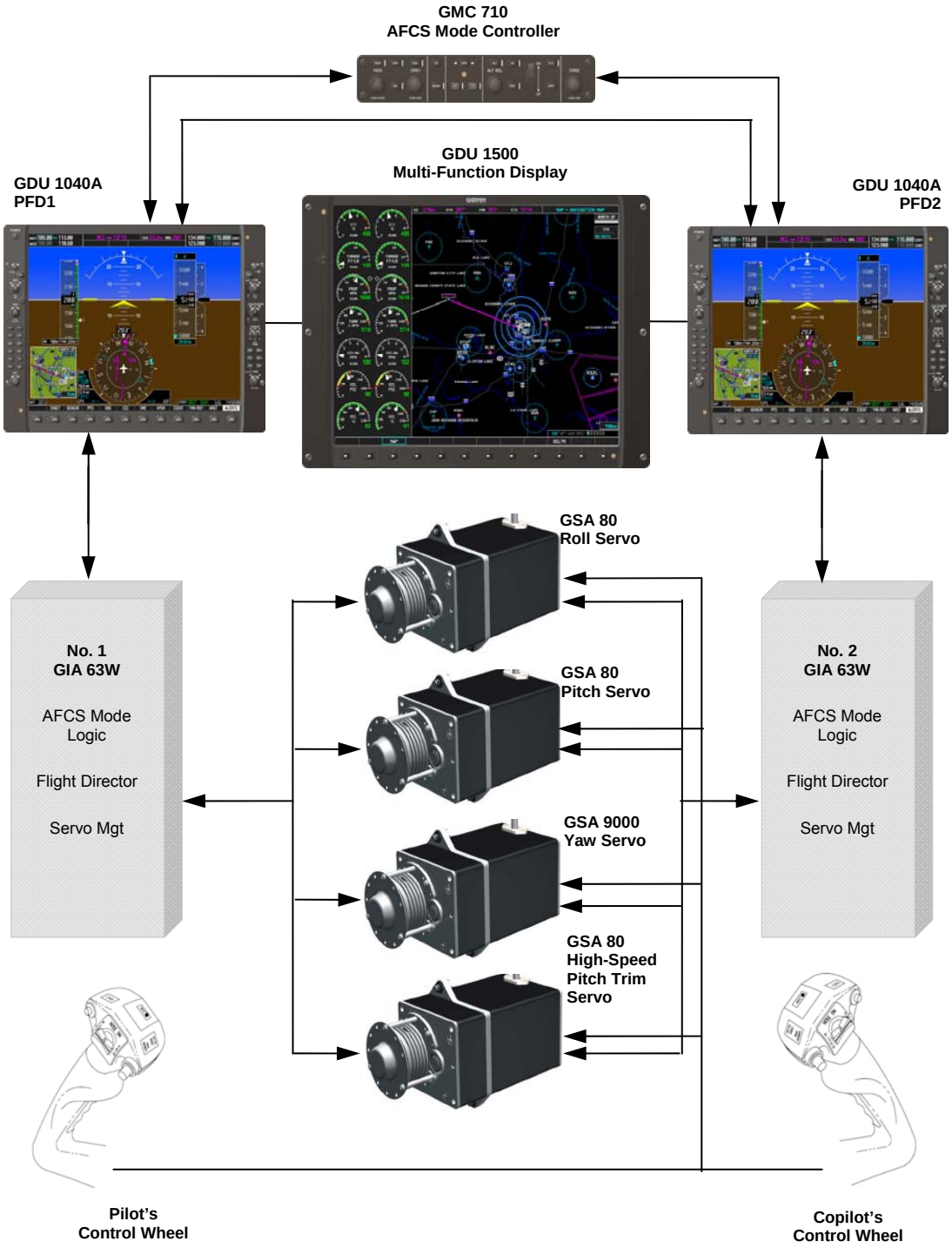


Figure 9, GFC 700 System Interface

FLIGHT CONTROLS

AFCS, AUTOPILOT, FLIGHT DIRECTOR AND RUDDER BOOST

The GFC 700 is a digital Automatic Flight Control System (AFCS), fully integrated within the G1000 System avionics architecture. The GFC 700 is a three-axis autopilot and flight director system which provides the pilot with the following features:

Autopilot (AP) — Autopilot operation occurs within the pitch, roll, and pitch trim servos. It also provides servo monitoring and automatic flight control in response to flight director steering commands, AHRS attitude and rate information, and airspeed.

Flight Director (FD) - Two flight directors, each operating independently within their respective GIA and referred to as pilot-side and copilot-side. Commands for the selected flight director are displayed on both PFDs.

The flight director provides:

- Command Bars showing pitch/roll guidance
- Vertical/lateral mode selection and processing
- Autopilot communication

Yaw Damper (YD) — The yaw servo is self-monitoring and provides Dutch Roll damping and turn coordination in response to yaw rate, roll angle, vertical acceleration, and airspeed.

Rudder Boost — The GFC 700 incorporates the rudder boost capabilities. The rudder boost is enabled by setting the pedestal mounted control switch, placarded RUDDER BOOST – OFF, to the RUDDER BOOST position. The system senses bleed air pressure from both engines. When the difference in these pressures exceeds a preset level, the yaw servo is activated and deflects the rudder to assist pilot effort in maintaining directional control. The servo contribution is proportional to the bleed air pressure differential. Trimming of the rudder must be accomplished by the pilot. The rudder boost system is disabled if the RUDDER BOOST switch is OFF, or when one of the bleed air switches is in the PNEU & ENVIR OFF position. Rudder boost is interrupted when the AP/YD DISC/TRIM INTRPT button is pressed.

An amber caution annunciator, [RUD BOOST OFF], is provided on the caution/advisory/status annunciator panel as illustrated below to indicate that the rudder boost system is unavailable due to the rudder boost control switch being in the OFF position, the AP/YD DISC/TRIM INTRPT has been pressed on either yoke, or if a fault in the rudder boost system has rendered it inoperative.

CAUTION /ADVISORY PANEL ILLUSTRATION

	**RUD BOOST OFF			RUD BOOST OFF	

**FA-226 and after, or airplanes with Raytheon Aircraft Kit P/N 130-9600 installed.

Electric Pitch Trim — The pitch trim servo provides manual electric pitch trim capability when the autopilot is not engaged.

Pilot commands to the AFCS are entered through the GMC 710 Autopilot Mode Controller mounted in the center of the cockpit under the airplane's glareshield. The GMC 710 controller also controls the heading bug, navigation course selector on each PFD, and the altitude preselect.

Other components of the autopilot include four servos that also contain autopilot processor, control wheel-mounted elevator trim switches (copilot's side optional), control wheel-mounted autopilot/yaw damper disconnect and trim interrupt switch (AP/YD DISC/TRIM INTRPT), control wheel-mounted CWS (Control Wheel Steering) switch, and a Go-Around switch mounted in the left power lever knob.

The following conditions will cause the autopilot to disconnect:

- Electrical power failure, including pulling the AFCS SERVOS circuit breaker
- Electrical power failure to the GMC 710 Autopilot Mode Controller, including pulling the MODE CTL circuit breaker
- Internal autopilot system failure
- Malfunction of either AHRS (two fully functional AHRS are required for the autopilot to function)
- Failure of the on-side PFD
- Depressing the red A/P Y/D DISC/TRIM INTRPT button on the pilot's or copilot's (if installed) control wheel
- Actuating the left section of the manual electric trim split switch, pilot's and copilot's control wheel
- Pushing the AP button on the autopilot mode controller when the autopilot is engaged
- Pushing the GO AROUND button on the left power lever (non-ESP equipped airplanes)

NOTE

Pressing and holding the CWS (control wheel steering) switch on the left grip of the pilot's control wheel will disconnect the autopilot servos from the airplane flight controls as long as the CWS switch is depressed. Upon release of the CWS switch, the system will synchronize to the existing pitch and roll modes selected. Review the Cockpit Reference Guide for more information.

The following tables list the available AFCS vertical and lateral modes with their corresponding controls and annunciations. The mode reference is displayed next to the active mode annunciation for Altitude Hold, Vertical Speed, and Flight Level Change modes. The NOSE UP/DN Wheel can be used to change the vertical mode reference while operating under Pitch Hold, Vertical Speed, or Flight Level Change Mode. Increments of change and acceptable ranges of values for each of these references using the NOSE UP/DN Wheel are also listed in the table.

AFCS VERTICAL MODES

Vertical Mode	Control	Annunciation	Reference Range	Reference Change Increment
Pitch Hold	(default)	PIT	25^{O} Nose up 20^{O} Nose Down	0.5^{O}
Level	***	LVL	0 fpm	
Selected Altitude Capture	*	ALTS		
Altitude Hold	**ALT** Key	ALT nnnnn FT		
Vertical Speed	**VS** Key	VS nnnn FPM	-4000 to +4000 fpm	100 fpm
Flight Level Change, IAS Hold	**FLC** Key	FLC nnn KT	100 to 263 kt	1 kt
Flight Level Change, Mach Hold		FLC M 0.nn	M 0.25 to 0.58	M0.01
Vertical Path Tracking (VNAV)	**VNV** Key	VPTH		
VNV Target Altitude Capture	**	ALTV		
Glidepath	**APR** Key	GP		
Glideslope		GS		
Takeoff (on ground)	**GA** Switch	TO		
Go Around (in air)		GA		

* ALTS arms automatically when PIT, VS, FLC, TO, or GA is active, and under VPTH when the Selected Altitude is to be captured instead of the VNV Target Altitude.

** ALTV arms automatically under VPTH when the VNV Target Altitude is to be captured instead of the Selected Altitude.

*** ESP equipped aircraft only. LVL mode is entered from an automatic engagement of the autopilot due to the aircraft remaining outside of the normal flight envelope for an extended amount of time.

AFCS LATERAL MODES

Lateral Mode	Control	Annunciation	Maximum Roll Command Limit
Roll Mode	(default)	ROL	25° Left Bank 25° Right Bank
Level	**	LVL	0° Roll
Low Bank	**BANK** Key	*	15° Left Bank 15° Right Bank
Heading Select	**HDG** Key	HDG	25° Left Bank 25° Right Bank
Navigation, GPS Arm/Capture/Track	**NAV** Key	GPS	30° Left Bank 30° Right Bank
Navigation, VOR Enroute Arm/Capture/Track		VOR	25° Left Bank 25° Right Bank
Navigation, LOC Arm/Capture/Track (No Glideslope)		LOC	25° Left Bank 25° Right Bank
Backcourse Arm/Capture/Track	**BC** Key	BC	25° Left Bank 25° Right Bank
Approach, GPS Arm/Capture/Track (Glidepath Mode Automatically Armed, if available)	**APR** Key	GPS	30° Left Bank 30° Right Bank
Approach, VOR Arm/Capture/Track		VAPP	25° Left Bank 25° Right Bank
Approach, ILS Arm/Capture/Track (Glideslope Mode Automatically Armed)		LOC	25° Left Bank 25° Right Bank
Takeoff (on ground)	**GA** Switch	TO	Wings Level
Go Around (in air)		GA	Wings Level

* No annunciation appears in the AFCS Status Box. The commandable bank angle range is indicated by a green band along the Roll Scale of the Attitude Indicator.

** ESP equipped aircraft only. LVL mode is entered from an automatic engagement of the autopilot due to the aircraft remaining outside of the normal flight envelope for an extended amount of time.

The CWS Button does not change lateral references for Heading Select, Navigation, Backcourse, or Approach modes. The autopilot guides the aircraft back to the Selected Heading/Course upon release of the CWS Button.

The autopilot may be engaged within the following ranges:

Pitch 50° nose up to 50° nose down

Roll ±75°

If the above pitch or roll limits are exceeded while the autopilot is engaged, the autopilot will disconnect. Engaging the autopilot outside of its command limits, but within its engagement limits, will cause the autopilot to return the aircraft within command limits. The autopilot is capable of commanding the aircraft in the following ranges:

Pitch 25° nose up to 20° nose down

Roll ±25°, or ±30° while using a GPS lateral mode

The Flight Director is not designed to perform unusual attitude recoveries from attitudes outside the following range:

Pitch 50° nose up to 50° nose down
Roll ±75°

If the above pitch or roll limits are exceeded with the flight director displayed on either PFD or the MFD, the flight director will be removed (de-cluttered) from the display until the aircraft is within display limits.

ELECTRIC ELEVATOR TRIM

Electric elevator trim is standard with the G1000 system installation. The electric elevator trim can be operated manually by the pilot using the pitch trim switches on the control wheel, or, automatically by the autopilot. Electric Elevator trim switches are optional on the copilot's control wheel. If pitch trim switches are installed on the copilot's control wheel, the pilot's pitch trim inputs override those made by the copilot

The ON/OFF toggle switch on the pedestal has been removed. Electric elevator trim will function if the AFCS SERVOS circuit breaker (right side circuit breaker panel) is set and the autopilot has satisfactorily completed a preflight test.

Pitch trim rocker switches on the pilot's control wheel manually control the electric elevator trim system. NOSE DN at the top of the rocker switch, when depressed causes the elevator pitch trim servo to move the trim tab in the upward direction resulting in the nose of the airplane pitching downward. The control column will move in the forward direction and the pitch trim wheel will move forward in the nose down direction. Depressing NOSE UP at the bottom of the rocker switch results in the opposite of the previous motions with the airplane nose pitching up.

Runaway or malfunctioning trim can be interrupted by pressing and holding the red A/P Y/D DISC TRIM INTRPT switch on either control wheel. Pulling the AFCS SERVOS circuit breaker on the right side circuit breaker panel will disable the electric elevator trim so it will not move when the TRIM INTRPT switch is released.

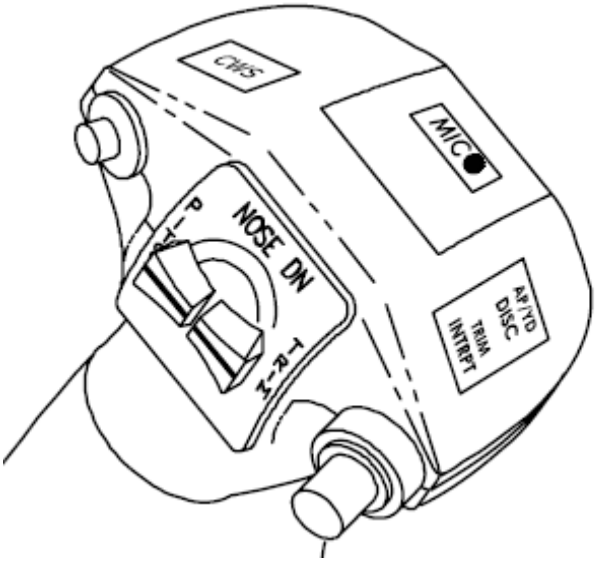


Figure 10, Electric Trim Switches, Pilot's Control Wheel

ELECTRONIC STABILITY & PROTECTION (ESP)

Electronic Stability and Protection (ESP) is an optional function on a GFC-700-equipped airplane that uses the autopilot servos to assist the pilot in maintaining the airplane in a safe flight condition within the aircraft's normal pitch, roll and airspeed envelopes. Additionally, ESP uses the aircraft's existing lift computer and stall warning system to protect against stalling the aircraft.

Electronic Stability and Protection is invoked when the pilot allows the airplane to enter one or more conditions beyond normal flight defined below:

- Pitch attitude beyond normal flight (+22°, -17°)
- Roll attitude beyond normal flight (45°)
- High airspeed beyond normal flight (Above 263 KIAS or .58M)

The conditions that are required for ESP to be available are:

- Pitch and Roll servos available
- Autopilot not engaged
- The Global Positioning System (GPS) altitude above ground (based on TAWS terrain data base) is more than 200 feet
- Aircraft is within the autopilot engagement envelope (+/-50° in pitch and +/-75° in roll)

Protection for excessive Pitch, Roll, and Airspeed is provided when the limit thresholds are first exceeded, which engages the appropriate servo in ESP mode at a nominal torque level to bring the airplane back within the normal flight envelope. If the airplane deviates further from the normal flight envelope, the servo torque will increase until the maximum torque level is reached in an attempt to return the aircraft into the normal flight envelope. Once the aircraft returns to within the normal flight envelope, ESP will deactivate the autopilot servos.

When the normal flight envelope thresholds have been exceeded for more than approximately 10 seconds, ESP Autolevel Mode is activated. Autolevel Mode engages the AFCS to bring the airplane back into straight and level flight based on 0° roll angle and 0 fpm vertical speed. An aural "ENGAGING AUTOPILOT" alert sounds and the Flight Director mode annunciation will indicate LVL for the pitch and roll modes.

Anytime an ESP mode is active, the pilot can interrupt ESP by using either the Control Wheel Steering (CWS) or Autopilot Disconnect (AP DISC) switch, or simply override ESP by overpowering the AFCS servos. The pilot may also disable ESP by accessing the Multi-Function Display (MFD) AUX – SYSTEM SETUP 2 page on the MFD and manually disabling ESP. Once the flight has ended and power is removed from the G1000 system, ESP will default to "Enabled" on the next power-up.

PFD display symbology implemented for ESP is illustrated in Figures 11 through 13. All other indications on the GDU displayed in the examples are to provide position reference for the ESP system symbology. The values indicated are not representative of a condition required to activate ESP.

- When the GDU receives information from the GIA indicating that ESP is not armed, the GDU will not display ESP indications.
- When the GDU receives information from the GIA indicating that ESP is armed, the GDU will display the ESP roll limit indices.
- The engagement and disengagement attitude limits are displayed with double hash marks on the roll indicator depending on the aircraft attitude and whether or not ESP is active in roll. When ESP is inactive (roll attitude within nominal limits) only the engagement limit indications are displayed in order to reduce clutter on the roll indicator. See Figure 11 for an example of the ESP engagement limit indications.

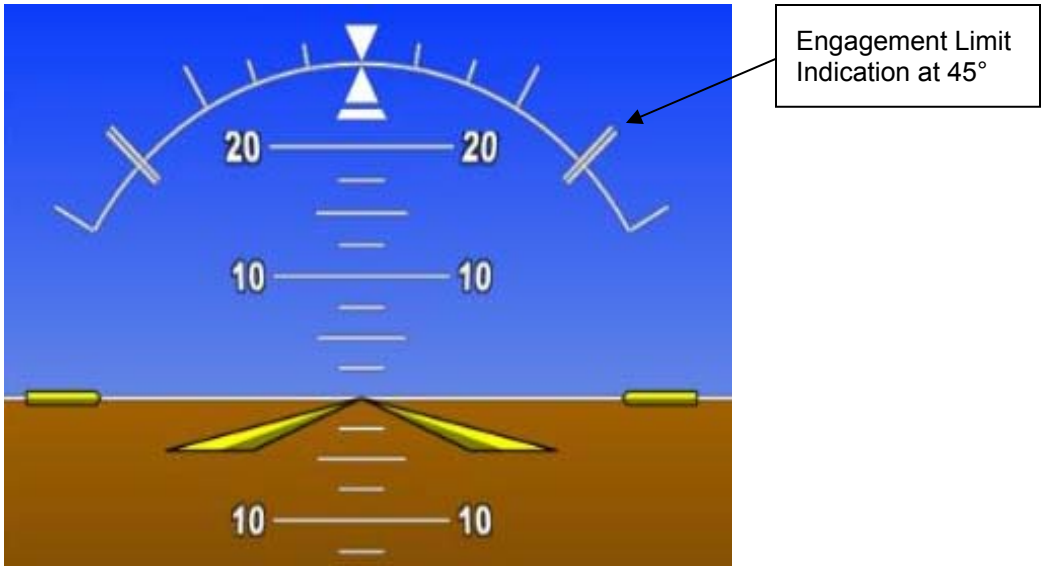


Figure 11 – Nominal Roll Attitude ESP Engagement Limit Indications

Once ESP becomes active in roll, the engagement limit indication that was crossed (either left or right) will move to the lower disengagement limit indication over a period of 1 second. The opposite roll limit remains at the engagement limit. Figure 12 shows the engagement limit indication just prior to ESP activation (left image) and just after ESP activation (right image 1 second after ESP activation).

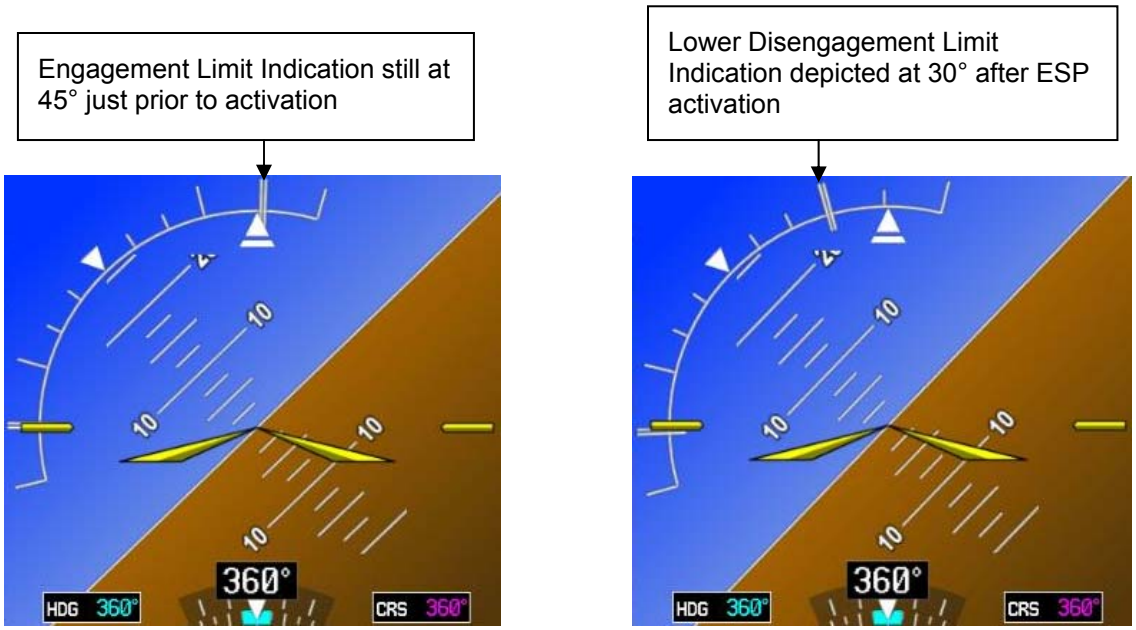


Figure 12 – Engagement Limit Indications Upon ESP Activation

If an attitude becomes extreme enough for the upper disengagement limit indication to be shown it will be drawn in a similar fashion to the engagement limit indication. See Figure 13 for an example of the ESP roll indication when ESP is active with an extreme roll attitude. In this case, the left roll limit is the engagement limit and the two right roll ESP limits are the lower and upper disengagement limit indications.

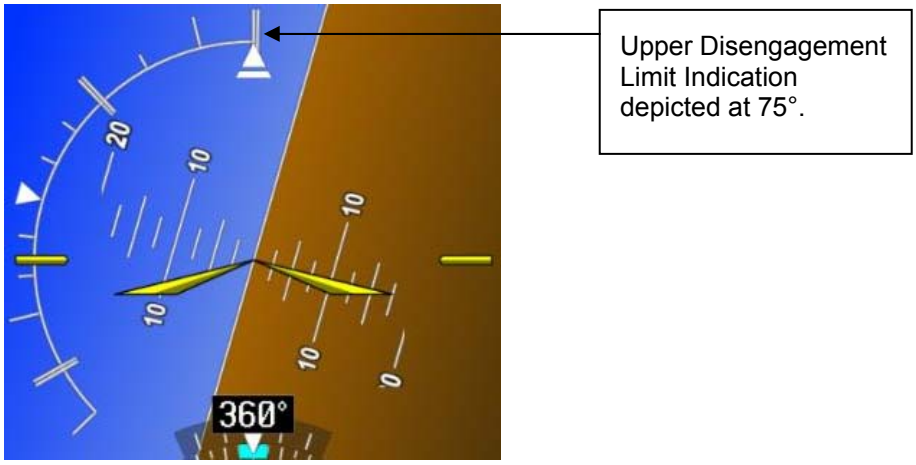


Figure 13 – Minimum and Maximum Roll Attitude ESP Disengagement Limit Indications

The ESP roll limit indications are not de-cluttered when the aircraft is in an extreme attitude. ESP roll limit indications are not shown when ESP is not configured for a given installation, ESP is not available as determined by the active GIA, or the autopilot is engaged.

Autopilot Underspeed Protection

For aircraft that have ESP installed, the AFCS is able to detect and protect against underspeed situations while the autopilot is engaged.

When the AFCS is engaged in a non-altitude critical mode (LVL, PIT, FLC, VS, VNV) and airspeed falls below the minimum threshold of 100 KIAS, the AFCS automatically enters minimum airspeed mode. A MINSPD annunciation appears above the airspeed tape, and the AFCS causes the airplane to pitch down to maintain 100 KIAS. An aural “AIRSPEED” alert will sound once when entering non-altitude critical Underspeed Protection.

If the AFCS is engaged in an altitude critical mode (ALT, GS, GP and GA) and the aural stall warning is played for more than 1 second, the AFCS will maintain a wings-level roll attitude and pitch the aircraft down at ~1kt/sec to maintain an airspeed that will cause the aural stall warning to stop playing, plus 2 KIAS. Also, an aural “AIRSPEED” alert will sound every 5 seconds.

All Underspeed Protection modes are exited automatically when there is enough aircraft performance to follow the originally selected flight director mode and reference.

Coupled Go-Around

ESP equipped aircraft are capable of flying fully coupled go-around maneuvers. Pressing the GA button on the left power lever does not disengage the autopilot. Instead, the AP will attempt to capture and track the flight director command bars. If insufficient aircraft performance is available to follow the commands, the AFCS will enter altitude-critical Underspeed Protection mode after approximately 10 seconds. GA mode is the only ESP-associated mode that can be engaged below 200’ AGL GPS altitude.

FLIGHT INSTRUMENTS

G1000 FLIGHT INSTRUMENTS

Flight instruments are an integrated part of the G1000 system. For system descriptions, operating instructions, and abnormal failure indication refer to the Cockpit Reference and Pilot's Guides.

STANDBY FLIGHT INSTRUMENTS

STANDBY ALT/AS	
ALTITUDE - FEET	V_{MO} -KIAS
S.L. TO 21,000	259
21,000 TO 25,000	239
25,000 TO 30,000	214
ABOVE 30,000	191

There are three 2 ¼ inch standby instruments that are arranged vertically directly to the right of the pilot's Primary Flight Display:

- Standby attitude indicator
- Standby altimeter
- Standby airspeed indicator

The standby attitude indicator located at the top of the stack is normally powered by the Triple Fed Bus. In the event of total loss of aircraft electrical power, there is a standby battery that will power the standby attitude indicator for at least 30 minutes.

The second instrument in the stack is a standby altimeter. It is a mechanical instrument that requires no electrical power to display altitude. Electrical power is used for internal instrument lighting, and for an internal vibrator that is used to minimize indicator pointer sticking. The vibrator is normally powered from the Triple Fed Bus. In the event of total loss of normal aircraft electrical power, the vibrator and internal lighting are powered by the standby battery. The standby altimeter uses the copilot's static system for its source of static air pressure.

The bottom instrument is a mechanical airspeed indicator. It is a mechanical instrument that requires no electrical power to operate. Electrical power is used for internal lighting. In normal operation, power for standby instrument lighting comes from the Triple Fed Bus. In the event of a total loss of aircraft electrical power, the standby battery will power the instrument's internal lighting. The standby airspeed indicator uses the copilot's static system for its source of static air pressure, and the copilot's pitot system for its source of impact air pressure.

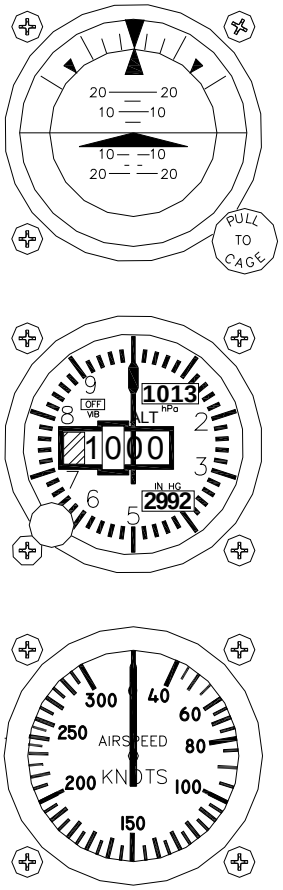


Figure 14, Standby Flight Instruments

ENGINE INSTRUMENTATION

Engine instruments, located in a window on the left side of the MFD, are grouped according to their function. The G1000 engine gauges are constructed and arranged to emulate the mechanical gauges they replaced. At the top, the ITT (Interstage Turbine Temperature) indicators and torquemeters are used to set take-off power. Climb and cruise power are established using the torquemeters and propeller tachometers while observing ITT limits. Gas generator (N_1) operation is monitored by the gas generator tachometers. The lower grouping consists of the fuel flow indicators and the oil pressure/temperature indicators.

The engine transducers send their signals to the GARMIN GEAs (Engine and Airframe LRU) which process the signals and allow the engine parameters to be displayed on the MFD. There are two GEAs; one for each engine. Operating on 28vdc power, both GEAs receive power from the Triple Fed Bus. The GEAs are protected by circuit breakers located on the left side circuit breaker panel labeled GEA.

The ITT indicator gives a reading of engine gas temperature between the compressor turbine and the power turbines. A digital indication combined with the pointer gives a resolution of $1^{O}C$.

The torquemeters give an indication in percent (%) torque being applied to the propeller. A digital indication combined with the pointer gives a resolution of 0.2%.

Propeller Autofeather annunciations are located adjacent the torquemeters, to the upper right of each indicator. When the autofeather system is armed, the green 'AFX' annunciations will be posted.

The propeller tachometer reads directly in revolutions per minute. A digital indication combined with the pointer gives a resolution of 10 rpm.

The N_1 or gas generator tachometer is in percent of rpm, based on a figure of 37,500 rpm at 100%. Maximum continuous gas generator speed is limited to 39,000 rpm or 104.0% N_1. A digital indication combined with the pointer gives a resolution of 0.1% rpm.

The fuel flow indicators give an indication of fuel consumption in pounds of fuel per hour. A digital indication combined with the pointer gives a resolution of 1 lb/hr.

The oil pressure indicator displays oil pressure (in PSI). A digital indication combined with the pointer gives oil pressure a resolution of 1 psi.

The oil temperature indicator displays oil temperature (in Degrees Celsius). A digital indication combined with the pointer gives oil temperature a resolution of 1°C

A propeller synchroscope, located above and between the propeller tachometers, indicates propeller synchronization. When the propellers are operating at the same rpm, the display will show stationary diamond symbols. As one propeller begins to turn faster than the other propeller, the diamonds will begin to move towards the faster turning propeller and transition into an arrowhead pointing towards the faster turning propeller. The transition to a full arrowhead is complete when the propeller speed difference is equal to 50 rpm. This instrument aids the pilot in obtaining synchronization of the propellers.

PROPELLER SYNCHROPHASER

A push button ON/OFF switch is located on the instrument panel below the pilot's PFD that turns the propeller synchrophaser ON and OFF. To turn the propeller synchrophaser ON, push the PROP SYNC switch. A green ON annunciator will illuminate when the system is on. To turn the propeller synchrophaser OFF, push the PROP SYNC switch.

Refer to the Systems Description section in the airplane's original Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for a description of the synchrophaser and its operation.

ELECTRICAL SYSTEM

INVERTERS

The two solid-state inverters are not needed with the G1000 system and have been removed.

POWER DISTRIBUTION

There are no changes to the electrical power generation, power feeders, control, or fault protection.

AVIONICS/ELECTRICAL EQUIPMENT BUS CONNECTION

LEFT GENERATOR BUS (GEN No. 1)	CENTER BUS	RIGHT GENERATOR BUS (GEN No. 2)
No. 2 Avionics Bus	AHRS 1 Secondary Power	No. 3 Avionics Bus
COM 2	ADC 1 Secondary Power	Datalink
AUDIO 2	Condenser Blower	Traffic
XPDR 2	Electric Heat (Aft)	WIFI
RADAR	Electric Heat (Fwd)	IRIDIUM
DME	GIA 1 Secondary Power	IRIDIUM Heater
ADF	Ice Lights	Air Conditioner Clutch
Radio Altimeter	Landing Gear Motor	Blower, Aft Evaporator
WX-500 Stormscope (OPT)	Navigation Lights	Brake Deice (OPT)
Beacon Lights	PFD 1 Secondary Power	Bus Tie Power, R Gen
Bleed Air Control, R	Prop Deice Power (Manual), L & R	Bus Tie Control
Blower, Vent	Taxi Lights	Bus Tie Indicator
Bus Tie Power, L Gen		Chip Detector, R
Chip Detector, L		Copilot PFD & Clock Lights
Cigar Lighter		Engine Anti-Ice, R Standby
Engine Anti-Ice, L Standby		Firewall Shutoff Valve, R
Firewall Shutoff Valve, L		Fuel Crossfeed
Flap Indicator & Control		Fuel Pressure Warning, R
Flap Motor		Fuel Qty, R

LEFT GENERATOR BUS (GEN No. 1)	CENTER BUS	RIGHT GENERATOR BUS (GEN No. 2)
Flight Inst (Pilot) & Side Panel Lights		Fuel Qty Warning, R
Fuel Pressure Warning, L		Fuel Qty Warning & Transfer, Aux R
Fuel Qty, L		Fuel Vent Heat, R
Fuel Qty Warning, L		Landing Light, R
Fuel Qty Warning & Transfer, Aux L		Pitot Heat, R
Fuel Vent Heat, L		Prop Sync (OPT)
Furnishings Master Control		PROP GOV TEST (FA-111 & AFT)
Landing Light, L		Reading Lights
MFD Standby Lights		Recognition Lights
No Smoking, FSB & Reading Lights		Refreshment Bar, R
Prop Deice, Auto		Signal Conditioner, R
PROP GOV TEST (FA-2 thru FA-110)		Stall Warning Heat
Refreshment Bar, L		Strobe Lights
Signal Conditioner, L		Sub Panel, Overhead, Console Lights
Tail Flood Lights		Toilet
Windshield Anti-Ice Control, Pilots		Window Defog
Windshield Anti-Ice Power, Pilots		Windshield Anti-Ice, Copilot

TRIPLE FED BUS	HOT BATTERY BUS	STANDBY BATTERY
Avionics No. 1 Bus	Battery Relay	Compass Light
XPDR 1	Battery Bus Tie	Instrument Indirect Lights
ADC 1 Primary Power	Voltmeter	Standby Altimeter Vibrator
ADC 2	Cabin Entry Lights	Standby Attitude
AFCS Servos	Door Lock Lights	Standby Battery Indicator
AHRS 1 Primary Power	Engine Fire Extinguisher, L & R	Standby Instrument Backlighting
AHRS 2		
Annunciator Indicator		
Annunciator Power		
Audio 1		
Aural Warning		
Autofeather		
Avionics Master		
Bleed Air Control, L		
Bleed Air Warning, L & R		

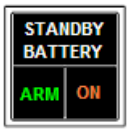
TRIPLE FED BUS

Bus Tie Power, TPL FED
Cabin Audio
Cabin Lights
Cabin Pressurization Control
Cabin Temperature Control
COM 1
Eng Anti-Ice, L & R Main
Fan – PFD/GIA, L & R
Fire Detection L & R
Firewall Valve L & R (Alternate)
FMS Control
GEA, L & R
GIA 1 Primary Power
GIA 2
GSD
Ignitor Power L & R
Instrument Indirect Lights
Landing Gear Control
Landing Gear Indication
Landing Gear Relay
Landing Gear Warning
MFD
MFD Fan
Mode Control
Oil Pressure, L & R
Oil Pressure Warning, L & R
Outside Air Temperature (OAT)
Oxygen Control
PFD 1 Primary Power
PFD 2
Pitot Heat, L
Prop Deice Control, Manual
Signal Conditioner, L & R
Start Control, L & R
Stall Warning
Standby Pump L & R
Standby Attitude
Standby Altimeter Vibrator
Standby Auxiliary Battery

TRIPLE FED BUS

Surface Deice
Torquemeter, L & R
Voice Recorder
Windshield Wiper

STANDBY BATTERY POWER SUPPLY



The G1000 installation incorporates a 24 vdc, 5 Ah L-3 Avionics model PS-835 Standby Battery that provides electrical power for the standby attitude gyro, standby altimeter vibrator, and internal lighting for the three standby instruments and magnetic compass for a minimum of 30 minutes following a total loss of aircraft power including the aircraft's battery.

A push button switch located directly below the standby airspeed indicator controls the standby battery power system. The switch is a push ON (switch latches in), push OFF (switch pops out) type of switch.

The system has three modes: OFF, ON, and ARM.

OFF — The system is OFF when the Standby Battery switch is not depressed. There are no internal switch annunciators illuminated in the switch when the system is OFF.

ON (Amber) — Illuminates when the standby battery is powering the standby instruments. The Standby Battery switch must be latched 'IN' and the airplane has no source of normal electrical power for the standby battery to power the standby instruments. When the ON annunciator is illuminated, the standby battery will provide electrical power for the three standby instruments for at least 30 minutes.

ARM (Green) — The system is armed for automatic operation when the Standby Battery switch is latched 'IN' and the airplane is being powered by a normal source of electrical power. Normal power sources include the airplane's battery, at least one generator, or external power.

During normal operations, the standby battery remains in a fully charged state by its own trickle charger, which is powered from the electrical system through the STBY AUX BAT circuit breaker located on the right side circuit breaker panel.

LIGHTING SYSTEMS

COCKPIT

An overhead light control panel, accessible to both pilots, incorporates a functional arrangement of all lighting systems. Each light group has its own rheostat switch placarded BRT – OFF. The MASTER PANEL LIGHTS – ON – OFF switch is the master switch for: PILOT PFD, STANDBY INSTRUMENT LIGHTS, MFD, OVERHEAD PED & SUBPANEL LIGHTS, SIDE PANEL, CLOCKS, and COPILOT PFD.

PILOT PFD – Controls the brightness of the pilot's PFD.

STANDBY INSTRUMENT LIGHTS - Controls the brightness of the internal lighting for the standby attitude indicator, standby altimeter, and standby airspeed indicator.

MFD – Controls the brightness of the Multi-Function Display (MFD).

OVERHEAD PED & SUBPANEL LIGHTS - Controls the brightness of the backlighting of the overhead light control panel and internal lighting of the overhead electrical gauges, throttle quadrant backlighting, internal lighting for pedestal-mounted gauges, and the MFD Controller panel backlighting, and the subpanel backlighting.

SIDE PANEL - Controls the brightness of the backlighting of the right side circuit breaker panel, the left side circuit breaker panel and the fuel gauge panel.

CLOCKS – Controls the brightness of the clocks mounted in the pilot's and copilot's control wheels.

COPILOT PFD – Controls the brightness of the copilot's PFD.

Separate rheostat switches individually control the instrument indirect lights in the glareshield and overhead map lights.

PITOT AND STATIC SYSTEM

PITOT

The pitot heads are the sources of impact air for the operation of the flight instruments.

A heated pitot mast is located on each side of the lower portion of the nose. Tubing from the left pitot mast is connected to the pilot's Air Data Computer (ADC1), and tubing from the right pitot mast is connected to the copilot's Air Data Computer (ADC2) and the standby airspeed indicator. The switch for the PITOT – LEFT – RIGHT – OFF is located in the ICE PROTECTION group on the pilot's right subpanel.

STATIC

The normal static system has two separate sources of static air. One source is connected to the pilot's Air Data Computer (ADC1), and the other is connected to the copilot's Air Data Computer (ADC2) and the standby instruments. Each of the normal static air lines opens to the atmosphere through two static air ports—one on each side of the aft fuselage, four ports total.

An alternate static air line is also provided for the pilot's Air Data Computer (ADC1). In the event of a failure of the pilot's normal static air source (e.g., if ice accumulations should obstruct the static air ports), the alternate source can be selected by lifting the spring-clip retainer off the PILOT'S EMERGENCY STATIC AIR SOURCE valve handle, located on the right side panel, and moving the handle aft to the ALTERNATE position. This will connect the alternate static air line to the pilot's Air Data Computer (ADC1). The alternate line is open to the unpressurized area just aft of the rear pressure bulkhead. When the alternate static air source is not needed, ensure that PILOT'S EMERGENCY STATIC AIR SOURCE valve handle is held in the forward (NORMAL) position by the spring-clip retainer.

WARNING

THE PILOT'S AIRSPEED AND ALTIMETER INDICATIONS CHANGE WHEN THE ALTERNATE STATIC AIR SOURCE IS IN USE. REFER TO THE AIRSPEED CALIBRATION – ALTERNATE SYSTEM, AND THE ALTIMETER CORRECTION – ALTERNATE SYSTEM GRAPHS IN SECTION 5, PERFORMANCE, OF THE AIRPLANE'S ORIGINAL PILOT'S OPERATION HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL FOR OPERATION WHEN THE ALTERNATE STATIC AIR SOURCE IS IN USE.

There are three drain petcocks for draining the static air lines located below the side panel on the right sidewall behind an access cover. These drain petcocks should be opened to release any trapped moisture at each inspection interval or after exposure to visible moisture on the ground, and must be closed after draining.

For RVSM compliant aircraft that operate in RVSM airspace, special care must be taken when inspecting the static ports and surrounding regions during preflight inspection. The static port openings should be smooth and round, and free of foreign material. The fuselage skin in the RVSM critical region, which is defined by markings in the vicinity of the static ports, should have no skin defects, physical damage, or large gaps and steps in the skin surface caused by improperly seated access panels or hatches.

GROUND COMMUNICATIONS

Ground communication is provided by the G1000 system by turning ON the airplane's battery. COM 1 and the pilot's audio panel will be powered. The pilot may use the airplane's speaker and hand microphone or a headset for communication.

SYNTHETIC VISION

General

The SVS sub system is dependent upon terrain data provided by the underlying G1000 system. If, for some reason, the terrain data is not available from the G1000, all of the components of the SVS system will be unavailable. The flight path marker, horizon heading, and airport signs are all sub-components of the Synthetic Terrain display and are only available when Synthetic Terrain is enabled. Those features are selected or de-selected using the PFD softkeys on the SVS menu.

Synthetic Terrain

The synthetic (3D) terrain display on the PFD provides a perspective view of the terrain ahead of the aircraft showing ground features up to 30 degrees left and 35 degrees right of the airplane heading. The terrain display is derived from the same terrain data contained in the G1000 system that is optionally used to display terrain on the MFD map display. The terrain data has a resolution of 9 arc-seconds, this means that the terrain elevation contours in the database are stored broken down into squares 9 arc-seconds on each side. That data is processed and smoothed by the G1000 system to provide the synthetic terrain display. In some instances, terrain features such as lakes in mountainous areas may be presented by the SVS system as if the lake water extends somewhat up the mountainside. This is due to the limitations of the terrain database resolution but is not significant for the approved uses of the SVS system.

The SVS terrain display will show land contours; large water features; and, towers and other obstacles over 200 ft AGL (including buildings), that are included in the G1000 obstacle database. In order to provide a clean, uncluttered PFD display, cultural features on the ground such as; roads and highways, railroad tracks, cities, and political boundaries (state / county lines) are not displayed on the PFD even if those features are selected for display on the MFD. The colors used to display the terrain elevation contours are similar to those used on the MFD map. The terrain display also includes a north-south, east-west grid to assist in orientation relative to the terrain.

The terrain display is intended to serve as an awareness tool only. It may not provide either the accuracy or fidelity, or both, on which to solely base decisions and plan maneuvers to avoid terrain or obstacles. Navigation must not be predicated solely upon the use of the TAWS, Terrain or Obstacle data displayed by the G1000 SVS system.

The Terrain/Obstacle/Airport databases have an area of coverage as detailed below:

- The terrain database has an area of coverage from North 90° Latitude to South 90° Latitude in all longitudes.
- The obstacle database has an area of coverage that includes the United States and Europe.

NOTE

The area of coverage may be modified, as additional terrain data sources become available.

Obstacle and Terrain Alerts and Warnings

Obstacles and terrain displayed on the SVS system may be highlighted if an alert or warning is generated by the G1000 Terrain or TAWS system. If an obstacle alert is presented for an obstacle that is in the SVS field of view, the obstacle symbol on the PFD will turn yellow in color. If an obstacle warning is generated by the G1000 system, the obstacle symbol on the PFD will turn red.

If the G1000 Terrain or TAWS system generates a terrain alert or warning, the terrain feature displayed on the PFD will be colored yellow for an alert or red for a warning for as long as the alert remains valid.

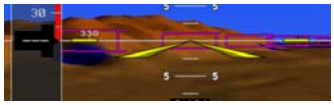
Because the area monitored by the Terrain or TAWS system can be wider than the field of view that can be displayed by the SVS system, it is possible to receive an obstacle or terrain audible alert for an obstacle or terrain that is not shown on the SVS display. In those cases, the object generating the alert will be left or right of the aircraft. Refer to the other displays in the aircraft to determine the cause of the message.

Flight Path Marker

The SVS display includes a green circular barbed symbol called the Flight Path Marker (FPM) that represents the current path of the airplane relative to the terrain display. The FPM is always displayed when synthetic terrain is displayed and the aircraft ground speed exceeds 30 kt. The FPM indicates the current lateral and vertical path of the airplane as determined by the GPS sensor. If the FPM is above the horizon line, the airplane is climbing, and similarly if the FPM is below the horizon line, the airplane is descending. If the airplane is flying in a crosswind, the FPM will be offset from the center of the display. In that case, the center of the PFD airplane reference symbol indicates the airplane heading and the FPM indicates the direction that the airplane is actually moving, taking into account the crosswind.

The FPM indicates the current path of the airplane but does not predict the future path. If aircraft attitude, power setting, airspeed, crosswind, etc. are changed, the FPM will move to indicate the new path resulting from those changes.

If the FPM is below the terrain or obstacle displayed behind it on the PFD, the current aircraft path will not clear that terrain or obstacle. If the FPM is above that terrain or obstacle, the aircraft will clear the terrain or obstacle IF, AND ONLY IF, THE CURRENT AIRCRAFT CONFIGURATION IS MAINTAINED, AND THE AIRCRAFT PERFORMANCE WILL PERMIT YOU TO MAINTAIN THE CURRENT VERTICAL (CLIMB) GRADIENT UNTIL PAST THE TERRAIN OR OBSTACLE.

Pathway 

If PATHWAY is enabled on the SVS menu of the PFD and a defined navigation path has been entered on the G1000, the SVS system will display a pathway, sometimes called a “highway in the sky” or HITS. The pathway is a perspective representation of the programmed flight path. When the aircraft is well off course, the pathway will be displayed as a number boxes floating in the sky along the programmed lateral and vertical path. As the aircraft intercepts the programmed flight path, the number of boxes displayed will be reduced to a maximum of four to avoid cluttering the PFD display. The pathway is only displayed for navigation paths that are fully defined by the sensor in use. Because a fully defined lateral and vertical path through space is not defined by them, a Pathway is not displayed for heading legs, VOR, LOC, BC or ADF segments. When the Pathway is displayed, the color of the boxes indicates the sensor generating the path. If the GPS sensor is in use, the boxes will be magenta colored. If the LOC sensor is defining the path in use, the boxes will be green.

The Pathway boxes are +- 100 ft in vertical dimension and approximately +-380 ft horizontally from the center of the box. The Pathway presentation is intended only to aid the pilot in awareness of the programmed flight path location relative to the airplane’s current position. The pathway is not intended for use as a primary reference in tracking the navigation path.

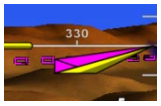
If a GPS based descent profile has been programmed either on the G1000 flight plan page or as part of an approach or STAR, the descent will be displayed by the Pathway. Climb paths are never displayed by the Pathway. If a profile requires a climb, the Pathway will be displayed as a level segment at the higher of the altitude defined by the programmed path or the G1000 altitude selector.

Traffic

If traffic that is within the SVS field of view is detected by the G1000 system, a symbol will be displayed on the PFD indicating the direction and relative altitude of the traffic. The traffic will be displayed as a white diamond unless it generates a traffic alert. Traffic that causes an alert will be displayed as a solid yellow circle accompanied by a yellow TRAFFIC annunciator to the right of top of the airspeed display tape.

Horizon line

The SVS display includes an always visible white horizon line that represents the true horizon. Terrain will be presented behind the horizon line, and terrain shown above the horizon line is above the current aircraft altitude. Terrain that is shown below the horizon line is below the aircraft altitude.

Horizon Heading 

A heading scale may be displayed on the PFD horizon line, if selected by the pilot. The heading marks are spaced in even 30 degree increments and are presented just above the horizon line with tic marks that intersect the horizon line. The horizon heading will correspond to that presented by the HSI. Because the horizon heading is only displayed in 30 degree increments, it should only be used for general heading awareness and not be used to establish the aircraft heading.

Airport Signs and runway highlight

If APTSIGNS is selected, a “sign post” along with a representation of the runways will be plotted on the SVS display for nearby airports that are contained in the G1000 airport database. The signpost will become visible when you are within approximately 15nm of the airport. The text identifier for the airport will be displayed inside the airport sign when the aircraft reaches approximately 8 nm from the airport. Once the aircraft reaches approximately 4.5 nm from the airport, the airport sign will be removed but the runways presentation will remain. If an approach to a specific runway has been loaded and activated, that runway will be highlighted on the SVS display.

When on an approach, the highlight for the approach runway will be considerably larger than “normal” to assist in visually acquiring the runway. The oversized highlight will automatically shrink around the runway depiction so that the runway is proportionally displayed when the aircraft is within approximately ½ nm of the threshold. Runway highlighting is displayed even if APTSIGNS are turned off.

TAWS AND GPWS

Refer to the GARMIN Pilot's Guide and Cockpit Reference Guide, P/N 190-01343-01 and 190-01344-01 Rev. A or later FAA accepted revision for complete detailed descriptions of the GARMIN G1000 TAWS and GPWS system functions and operating instructions.

Most of the G1000 Class A TAWS and GPWS functions depend upon either GPS or radar (radio) altitude to function properly. The Altitude Voice Callout (VCO) GPWS function is one of the few that may use both altitudes for normal operation. Because of the unique functional nature of the VCO function, its description is contained in this section.

VCO Description

The advisory aural Voice Callouts (VCO) are part of the TAWS GPWS functionality. In Class A TAWS configurations, aural altitude callouts "Five Hundred," "Four Hundred," "Three Hundred," "Two Hundred," and "One Hundred" are generated based on inputs from the radar altimeter and GPS altitude. When the aircraft is more than 5 NM from an airport, the VCO messages are triggered solely on radar altitude and will not function if radar altitude is unavailable.

Inside of 5 NM to an airport, the callouts are based on the airplane's GPS altitude above the runway threshold as obtained from the G1000 aviation database. Loss of GPS may cause VCO messages not be issued. If a flight plan was loaded in the G1000 at the time of GPS signal loss, VCO messages will not be issued. Conversely, if no flight plan was loaded at the time of GPS signal loss, VCO messages will be provided.

In Class B TAWS configurations, VCO issues the "Five Hundred" aural message only . The messages are based only on GPS altitude, even if the aircraft has an operable radar altimeter. VCO messages are not available when the system status annunciations shown below are posted.

System Status Type	Visual Annunciation	Aural Annunciation
TAWS System Test in Progress	TAWS TEST	None
TAWS System Failure	TAWS FAIL	"TAWS System Failure"
TAWS Not Available	TAWS N/A	"TAWS Not Available"

VCO callouts are inactive at the initialization of the TAWS-A or TAWS-B system. When the aircraft's height above terrain exceeds 675 feet, the function becomes enabled and is provided during all flight phases. Alerts are issued, one time only, when the height above terrain becomes less than 500 feet down to 100 feet (TAWS-A), at which time the VCO is disabled until the aircraft climbs at least 175 above the altitude associated with the last VCO callout that was issued. VCO alerts cannot be inhibited in any TAWS configuration.

GTS 8000 TCAS II

Refer to the GARMIN Pilot's Guide and Cockpit Reference Guide, P/N 190-01343-01 and 190-01344-01 Rev. A or later FAA accepted revision for complete detailed descriptions of the GARMIN GTS 8000 TCAS II system function and operating instructions.

System Description

The TCAS II is an on-board collision avoidance system that identifies and displays aircraft that are potential collision threats. The GTS 8000 can issue resolution advisories (RAs) in the form of vertical maneuver guidance on the pilot and copilot's vertical speed indicators, in addition to aural messages. Using transponder replies from threat aircraft, the GTS 8000 determines relative altitude, range, and bearing of any ATCRBS or Mode S equipped aircraft with altitude reporting capability. Using this information, the GTS 8000 will determine the type of advisory to issue. ATCRBS equipped aircraft that only reply with Mode A information will not provide altitude information. Therefore, the GTS 8000 will not issue resolution advisories for these aircraft, but can issue traffic advisories. The GTS 8000 will not detect aircraft that are not equipped with transponders.

The GTS 8000 TCAS II components as installed in the King Air 300/300LW consist of:

- A TCAS II processor
- A TCAS II compatible Mode S Transponder. As installed in the King Air 300/300LW with a G1000 system, the GTX 3000 transponder is used.
- One top mounted antenna,
- One bottom mounted antenna
- A radio altimeter
- Controls provided via the GDU 1040 and GDSU 1500 display units

The TCAS II provides two levels of advisories:

1. If the traffic gets within 25 to 48 seconds (depending upon altitude) of projected Closest Point of Approach (CPA), it is then considered an intruder, and an aural and visual traffic advisory (TA) is issued. This level calls attention to what may develop into a collision threat using the traffic map displays and the aural message, "TRAFFIC - TRAFFIC." It permits mental and physical preparation for a possible maneuver to follow, and assists the pilot in achieving visual acquisition of the intruding aircraft
2. If the intruder gets within 15 to 35 seconds of CPA (depending on altitude), it is considered a threat and an aural and visual resolution advisory (RA) is issued. The RA provides a recommended vertical maneuver using VSIs located on each PFD, and voice messages to provide adequate vertical separation from the threat aircraft, or prevents initiation of a maneuver that would place the TCAS II aircraft in jeopardy. The GTS 8000 TCAS II is considered a backup system to the "SEE AND AVOID" concept and the ATC surveillance.

When a TCAS II RA is issued, the pilot should immediately disconnect the autopilot and pitch the aircraft in the direction that will result in a vertical speed in the green band on the VSI. The flight director will NOT provide guidance to comply with the RA command.

The TCAS II RA algorithms are based on the pilot initiating the initial 0.25 g acceleration maneuver within approximately 5 seconds. Pilot response is expected within approximately 2.5 seconds if an additional RA is issued (The increase rate and rate reversal RAs are based on a 0.35 g acceleration maneuver.).

Because of these requirements and the rate limits of the autopilots, all RA responses must be hand-flown and not with the autopilot engaged.

Modified advisories are posted after the response to an initial advisory has been completed and the TCAS II airplane is projected to have adequate altitude separation from the intruder. The initial RA is said to weaken, indicating a return towards the original flight path or clearance is allowed. When the initial advisory weakens, the green band on the VSI is repositioned to indicate level flight, the magnitude of the red band decreased, and “LEVEL OFF, LEVEL OFF” is announced. The modified RA indicates a return to level flight so that the altitude displacement in response to the initial RA can be minimized. This RA will remain displayed until the “CLEAR OF CONFLICT” aural annunciation is issued. Following the weakening advisory will greatly reduce the ultimate altitude deviation caused by the original corrective resolution advisory.

After deviating from an ATC clearance or instruction in response to a TCAS II RA, notify ATC of the deviation as soon as possible. Following a TCAS II “CLEAR OF CONFLICT” advisory, the pilot should expeditiously return to the applicable ATC clearance unless otherwise directed by ATC.

The threat aircraft track or altitude information can be lost during an RA. If so, the RA will terminate without a “CLEAR OF CONFLICT” annunciation.

TCAS II resolution advisories are annunciated by the following voice messages, along with the expected pilot response:

- “CLIMB, CLIMB”-- climb at the rate depicted by the green (fly to) arc on the VSI, nominally between 1,500 and 2,000 fpm.
- “DESCEND, DESCEND”-- descend at the rate depicted by the green (fly to) arc on the VSI nominally between 1,500 and 2,000 fpm.
- “MONITOR VERTICAL SPEED”-- ensure that vertical speed is out of the illuminated VSI red arc until the RA is completed.
- “LEVEL OFF, LEVEL OFF” -- reduce vertical speed to zero feet per minute. A green arc will be displayed on the VSI beginning at zero feet per minute. This can be issued as the initial RA or as a subsequent RA.
- “CLEAR OF CONFLICT”-- range is increasing, and separation is adequate. Expeditiously return to the applicable ATC clearance, unless otherwise directed by ATC.
- “CLIMB, CROSSING CLIMB, CLIMB, CROSSING CLIMB”-- climb at the rate depicted by the green (fly to) arc on the VSI, nominally between 1,500 and 2,000 fpm. Safe separation will best be achieved by climbing through the threat aircraft’s flight path.
- “DESCEND, CROSSING DESCEND, DESCEND, CROSSING DESCEND”-- descend at the rate depicted by the green (fly to) arc on the VSI, nominally between 1,500 and 2,000 fpm. Safe separation will best be achieved by descending through the intruder’s flight path.
- “MAINTAIN VERTICAL SPEED, MAINTAIN”-- continue the existing climb or descent rate, or other vertical speed, as depicted by the green (fly to) arc on the VSI.
- “MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN”— continue the existing climb or descent rate, or other vertical speed, as depicted by the green (fly to) arc on the VSI. Safe separation is best achieved by not altering the existing vertical speed and climbing or descending through the threat’s flight path.

The following voice messages annunciate enhanced TCAS II maneuvers when initial RA does not provide sufficient vertical separation. The tone and inflection indicate increased urgency:

- "INCREASE CLIMB, INCREASE CLIMB"-- climb at the rate depicted by the green (fly-to) arc on the VSI, nominally between 2,500 and 3,000 fpm. Received after "CLIMB" advisory, and indicates additional climb rate is required to achieve safe vertical separation from a maneuvering aircraft.
- "INCREASE DESCENT, INCREASE DESCENT"-- descend at the rate depicted by the green (fly-to) arc on the VSI, nominally between 2,500 and 3,000 fpm. Received after "DESCEND" advisory, and indicates additional descent rate is required to achieve safe vertical separation from a maneuvering aircraft.
- "CLIMB – CLIMB NOW, CLIMB – CLIMB NOW"-- climb at the rate depicted by the green (fly-to) arc on the VSI, nominally between 1,500 and 2,000 fpm. Received after a "DESCEND" resolution advisory and indicates a reversal in direction is required to achieve safe vertical separation from a maneuvering threat aircraft.
- "DESCEND – DESCEND NOW, DESCEND – DESCEND NOW"- descend at the rate depicted by the green (fly-to) arc on the VSI, nominally between 1,500 and 2,000 fpm. Received after a "CLIMB" resolution advisory and indicates a reversal in direction is required to achieve safe vertical separation from a maneuvering threat aircraft.

TCAS Resolution Advisories (RA) are inhibited below some radio altitudes. The chart below outlines the TCAS inhibits produced from radio altimeter information and the associated RA status.

RESOLUTION ADVISORY (RA) STATUS	RADIO ALTITUDE
"INCREASE DESCENT" RA	Inhibited below 1650 ft AGL while climbing and inhibited below 1450 ft AGL while descending.
"DESCEND" RA	Inhibited below 1200 ft AGL while climbing and inhibited below 1000 ft AGL while descending.
TA ONLY Aural Messages	Inhibited below 400 ft AGL while descending and inhibited below 600 ft AGL while climbing.
Other RAs	Inhibited below 1100 ft AGL while climbing, and inhibited below 900 ft AGL while descending. (TCAS automatically reverts to TA ONLY mode).
Advisory Priority	Automatically reverts to TA ONLY when higher priority advisories (such as GPWS/TAWS) occur.

Display and Controls

Threat Depiction

The G1000 and GTS 8000 depict aircraft on the system displays as follows:

Non-Threat Traffic – Open white diamond. Indicates intruding aircraft is greater than ±1200 feet relative altitude or beyond 5 nm distance.

Proximity Advisory (PA) – opaque white diamond. Indicates intruding aircraft is within ±1200 feet and within a 6 nm range but still not considered a threat.

Resolution Advisory (RA) – red box. Indicates intruding aircraft is closing to within 15 to 35 seconds of a potential collision. RA's include vertical guidance maneuvers designed to increase to maintain vertical separation from intruding aircraft.

Resolution Advisory Off Scale – ½ red box. Indicates RA beyond the selected map range (off scale)

Traffic Advisory (TA) – amber circle. Indicates hazardous intruding aircraft closing to within 25-48 seconds of a potential collision.

Traffic Advisory Off Scale – ½ amber circle. Indicates traffic advisory beyond the selected display range

Vertical Speed Display

RAs may be categorized into preventative and corrective RAs. The system issues a preventative RA to prevent vertical maneuvers. During an RA, vertical guidance indications appear on the Vertical Speed indicators of the PFD to provide visual pitch cues for the flight crew to use to achieve (or maintain) vertical separation from intruding traffic (Figure 15). The flight direction will NOT provide guidance necessary to satisfy the RA command.

While an RA is occurring, a red vertical bar appears on the VSI scale to indicate the range of vertical speeds to be avoided during the RA. If the current aircraft vertical speed is within this red range, the pointer on the VSI appears red. When an RA directs the flight crew to fly to (or maintain) a vertical speed, a green vertical bar will appear on the VSI scale at the recommended vertical speed range. The bars on the Vertical Speed Indicator are removed when the RA condition has been resolved.

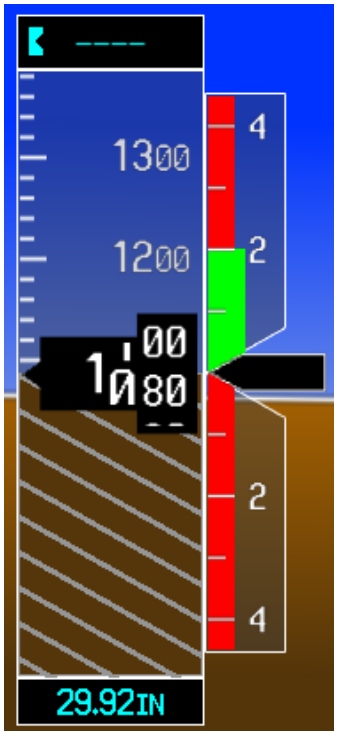


Figure 15, RA Vertical Speed Bands

Annunciations

The GTS 8000 provides the following annunciations. PFD annunciations are located in the upper left of each PFD, to the right of the airspeed indicator tape. Traffic Map modes and center banner annunciations are displayed on the PFD Inset Traffic Maps, and the MFD MAP – TRAFFIC MAP. Refer to Figures 16 and 17 for the locations of the PFD and MFD traffic display element locations.

Mode	PFD Annunciation	Traffic Map Mode Annunciation	Traffic Map Center Banner Annunciation	Aural Message
Traffic Advisory (TA)	TRAFFIC	TA/RA or TA ONLY	N/A	"TRAFFIC, TRAFFIC"
Resolution Advisory (RA)	TRAFFIC	TA/RA	N/A	Various
TCAS Failure	TCAS FAIL	FAIL	NO DATA DATA FAILED FAILED	May also be accompanied by "TCAS II System Failed"
TA Only Mode	TA ONLY	TA ONLY	N/A	None
TCAS Standby	TCAS STBY Or TCAS STBY	STANDBY	STANDBY also shown in white in center of page on ground, or amber in flight	None
TCAS Test	TRAFFIC	TEST	"TEST MODE" shown in white on top center of traffic map	"TCAS II System Test Passed"

The annunciators below appear in a banner at the lower left corner of maps on which traffic can be displayed:

Traffic Status Banner Annunciation	Description
RA OFF SCALE	A Resolution Advisory is outside the selected display range*. Annunciation is removed when traffic comes within the selected display range.
TA OFF SCALE	A Traffic Advisory is outside the selected display range*. Annunciation is removed when traffic comes within the selected display range.
RA X.X +/- XX <UP> or <DN>	System cannot determine bearing of Resolution Advisory**. Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend <UP> for climbing <DN> for descending traffic.
TA X.X +/- XX <UP> or <DN>	System cannot determine bearing of Traffic Advisory**. Annunciation indicates distance in nm, altitude separation in hundreds of feet, and altitude trend <UP> for climbing or <DN> for descending traffic.
TRFC FAIL	TCAS II unit has failed (unit is self-reporting a failure or sending incorrectly formatted data).
NO TCAS DATA	Data is not being received from the TCAS II unit.

*Shown as symbol on Traffic Map Page
** Shown in center of Traffic Map Page

Figure 16, PFD TCAS II Display Elements

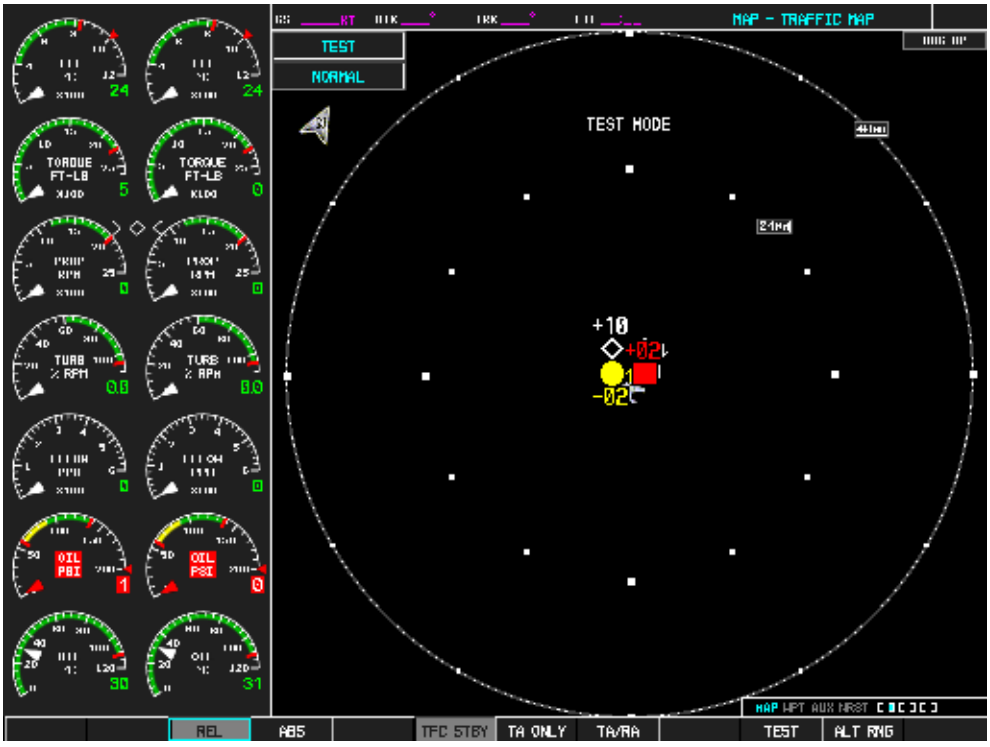


Figure 17, MFD TCAS II Display Elements

PFD Controls

The GTS 8000 can be controlled by softkeys on each PFD. The table below outlines the GTS 8000 controls available on the PFD. A green colored mode in the transponder window signifies that the transponder is in an in-flight mode. White colored transponder modes signify an on-ground status. The transponder should be left in ALT mode in flight and on ground unless directed by ATC to do otherwise.

Softkey Control				Function
XPDR/TFC				Top tier softkey
	MODE			Mode sub-tier softkey
		STBY		Places the GTS 8000 and the GTX 3000 transponder into STANDBY Mode
		ON		Places the GTX 3000 transponder into Mode A. Selecting this mode will also place the GTS 8000 into STANDBY mode.
		ALT		Places the GTX 3000 into altitude reporting mode. Selecting this mode allows all TCAS II modes to be on.
		TA ONLY		Selects TA ONLY Mode. No RAs will be generated in this mode.
		TA/RA		Selects TA/RA Mode. All TCAS II functions are on.
	TCAS			TCAS sub-tier softkey
		REL		Used to display traffic relative to own altitude
		ABS		Used to display traffic based on Absolute Altitude
		ALT RNG		Displays Altitude Range softkeys
			ABOVE	Displays non-threat and proximity traffic from 9000 feet above the aircraft to 2700 feet below the aircraft.
			NORMAL	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 2700 feet below the aircraft.
			BELOW	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 9000 feet below the aircraft.
			UNREST	All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.
		TEST		Initiates a self-test of the TCAS II system

MFD Controls

GTS 8000 controls are available via softkeys or page menu selections on the MFD. The table below outlines the GTS 8000 softkey controls available on the MAP – TRAFFIC MAP.

Softkey Control		Function
REL		Used to display traffic relative to own altitude.
ABS		Used to display traffic based on Absolute Altitude.
TFC STBY		Places the GTS 8000 into STANDBY Mode.
TA ONLY		Selects TA ONLY Mode. No RAs will be generated in this mode.
TA/RA		Selects TA/RA Mode. All TCAS II functions are on.
TEST		Initiates a self-test of the TCAS II system.
ALT RNG		Displays Altitude Range softkeys.
	ABOVE	Displays non-threat and proximity traffic from 9000 feet above the aircraft to 2700 feet below the aircraft.
	NORMAL	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 2700 feet below the aircraft.
	BELOW	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 9000 feet below the aircraft.
	UNREST	All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.

The table below lists the GTS 8000 page menu selections available on the MFD MAP – TRAFFIC MAP, and the function of each. The page menu selections are available by pressing the MENU softkey on the GCU 477 controller while viewing the MAP – TRAFFIC MAP.

Page Menu Selection	Function
Absolute Altitude	Used to display traffic based on Absolute Altitude.
Relative Altitude	Used to display traffic relative to own altitude.
Traffic Standby Mode	Places the GTS 8000 into STANDBY Mode.
TA Only Mode	Selects TA ONLY Mode. No RAs will be generated in this mode.
TA/RA Mode	Selects TA/RA Mode. All TCAS II functions are on.
Test Mode	Initiates a self-test of the TCAS II system.
Above	Displays non-threat and proximity traffic from 9000 feet above the aircraft to 2700 feet below the aircraft.
Normal	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 2700 feet below the aircraft.
Below	Displays non-threat and proximity traffic from 2700 feet above the aircraft to 9000 feet below the aircraft.
Unrestricted	All traffic is displayed from 9900 feet above and 9900 feet below the aircraft.

APPROACH BARO VNAV

General

All G1000 equipped King Air 300/300LW aircraft have enroute and terminal VNAV capability. Airplanes that have system software 0985.07 or later installed have additional ability to conduct barometric based VNAV operations while conducting certain GPS approaches using an automatically generated temperature compensated glidepath. It should be noted that the Approach Baro VNAV functionality is separate and distinct from enroute and terminal descent VNAV functions.

For GPS-based LPV, LNAV/VNAV, LNAV+V, and RNP approaches, glidepath vertical guidance is normally provided via the Space Based Augmentation System (SBAS) system. If SBAS is unavailable or disabled, the G1000 will provide automatic, temperature compensated glidepath vertical guidance on approaches that have LNAV/VNAV minima published, or on some approaches that are not authorized for SBAS. No pilot action is required to receive the temperature compensated glidepath when SBAS is not available or allowed.

Refer to the GARMIN Pilot's Guide and Cockpit Reference Guide, P/N 190-01343-01 and 190-01344-01 Rev. A or later FAA accepted revision for complete detailed descriptions of the GARMIN G1000 Approach Baro VNAV function and operating instructions.

Temperature Compensation

Final Approach Segment (FAS)

Altimeter systems assume an ISA temperature model of 15°C at sea level and a standard lapse rate of −6.5°C/km. When actual atmosphere deviates from the ISA model it results in altitude errors. For example, if the KICT RNAV (GPS) Y RWY 19R approach shown in Figure 18 were flown with baro-VNAV on a non-standard day, the guidance would be relative to a glide path angle other than the 3.00° published glide path angle.

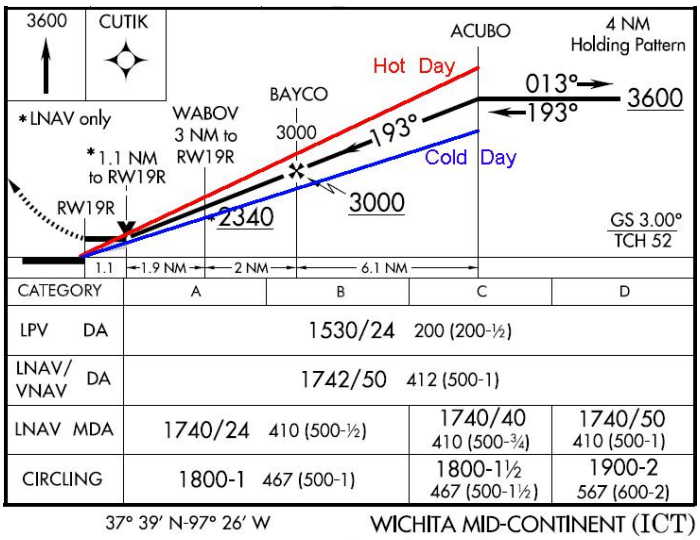


Figure 18 – Actual Descent Path on a Hot or Cold Day

In Figure 19 below, the approach plate notes for the same approach indicate it was designed to allow the approach to be safely flown within a temperature range of 2°F to 114°F. Outside of this temperature range, LNAV/VNAV minimums could not be used with uncompensated baro-VNAV systems.

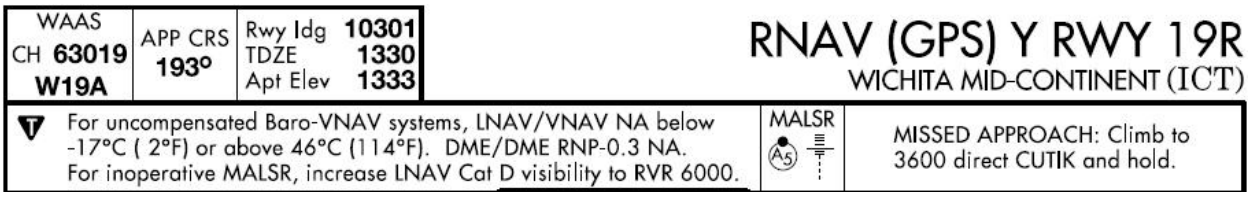

WAAS
CH 63019
W19A
APP CRS
193°
Rwy Idg 10301
TDZE 1330
Apt Elev 1333
RNAV (GPS) Y RWY 19R
WICHITA MID-CONTINENT (ICT)
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -17°C (2°F) or above 46°C (114°F). DME/DME RNP-0.3 NA.
For inoperative MALSR, increase LNAV Cat D visibility to RVR 6000.
MALSR
MISSED APPROACH: Climb to 3600 direct CUTIK and hold.

Figure 19 – Approach Plate Notes

The Garmin G1000 Approach Baro VNAV system is automatically temperature compensated to produce a glidepath position in space such that Baro VNAV approaches are always flown at the published glide path angle when the actual temperature deviates from the ISA model. This produces results similar to ILS glideslopes and LPV glidepaths that remain in the same position in space without respect to temperature.

To produce the correct geometric glide path angle on the final approach segment, temperature compensation is applied to the barometric altitude and used to determine the displayed vertical deviation. However, the altimeter continues to display uncompensated barometric altitude. The temperature compensation required depends on the temperature profile over the altitude range between the point at which the barometric setting is measured (presumed to be the approach airport) and the present altitude of the aircraft. This temperature profile is estimated by using the air data system static air temperature (SAT) and applying the standard temperature lapse rate to determine the temperature over the rest of the range. When using barometric altitude for vertical guidance along the final approach segment, temperature compensation is applied whether the temperature is above or below standard temperature. The actual compensated altitude is not displayed to the pilot during an approach.

Compensating Waypoint Altitudes

In some locales, temperature compensation is required for waypoints in the approach prior to the final approach segment due to terrain and/or obstacle clearance requirements. Currently, US operations do not require use of temperature compensated waypoint altitudes since non-standard temperature is factored into the approach design. Pilots operating in US airspace must request and obtain ATC approval prior to using temperature compensated waypoint altitudes since it may result in reduced vertical separation between aircraft. However, other countries (e.g. Canada) may require use of temperature compensation on certain procedures.

For the G1000 system, temperature compensation of waypoint altitudes on the active flight plan page is pilot-enabled by a menu option on the FPL – ACTIVE FLIGHT PLAN MFD page. Selecting the menu option displays a pop-up window to allow the pilot to enter the temperature at the destination that is cross-filled to the other GDUs so that a consistent temperature is used for temperature compensation of published approach waypoint altitudes and the approach minimum altitude. Refer to Figure 20. Enabling temperature compensation of published approach waypoint altitudes on one display enables it on all displays in the system. If compensation is already active, and the temperature matches the temperature being used for compensation of waypoint altitudes, the field at the bottom of this pop-up page reads “CANCEL COMPENSATION?”

Displayed waypoint altitudes should remain constant. Because the compensation may originally be computed when the aircraft is at a much higher altitude than the approach waypoint altitudes, compensation of published waypoint altitudes on the active flight plan page is based on the temperature reported at the field elevation (rather than using the measured static air temperature at the aircraft altitude).

Rather than adjusting the measured altitude (displayed as uncompensated barometric altitude on the altimeter), temperature compensation is applied to each published approach waypoint altitude shown in the active flight plan. This includes approach waypoints in the initial, intermediate, final, and missed approach segments. When the altimeter reaches the barometric altitude displayed in the active flight plan for the waypoint, this geopotential altitude is the original published MSL altitude for the waypoint.

Only published approach waypoint altitudes shown on the active flight plan are temperature compensated. No altitude outside a published approach procedure, no user entered altitude, and no altitude shown as a flight level is temperature compensated.

Temperature compensation of published waypoint altitudes on the active flight plan page is not dependent on use of barometric altitude for vertical guidance on the final approach segment, and is therefore available for any type of approach. Use of temperature compensation to adjust the vertical deviation along the final approach segment and display of temperature compensated waypoint altitudes on the active flight plan page are two separate features. Enabling the display of temperature compensated altitudes on the active flight plan page for published approach waypoints is independent of using temperature compensated altitude to compute vertical deviation along the final approach segment.

Figure 20 - Temperature Compensation Pop-Up Page

Display of Compensated Altitudes

To differentiate altitude values that have been adjusted for temperature compensation from uncompensated altitudes and user-entered altitudes, small slant text is used by the G1000 system (Figure 21) on altitude constraints that have temperature compensation applied. Temperature-compensated altitudes may be white, cyan, or subdued cyan to indicate reference altitudes, altitudes used for vertical guidance, and invalid altitudes respectively. Altitudes shown as a flight level (e.g. FL350) and user-entered altitudes are never temperature compensated by the system.

Figure 21- Display of Temperature-Compensated Altitudes

Temperature Compensation of Approach Minimums

To enable temperature compensation of the minimum altitude, a new option, “TEMP COMP”, has been added when selecting the minimum altitude reference type (in addition to “OFF”, “BARO”, and “RAD ALT”). The temperature at the destination airport is used for this purpose. The compensated value is displayed below the entered, uncompensated value (Figure 22). If a temperature has been entered for compensating waypoint altitudes on the active flight plan page, it is used as the default here, and vice-versa. Similar functionality exists in the minimums selection field on the approach selection pages (Figure 23).

The temperature at the destination airport is invalidated when a different approach is loaded into the active flight plan or when the system powers up. This disables temperature compensation of both the published approach waypoint altitudes on the active flight plan page and the minimum altitude. The minimum altitude selection type changes to “BARO” if it was previously set to “TEMP COMP”. Temperature compensation of the minimum altitude is not dependent on use of barometric altitude for vertical guidance on the FAS, and is therefore available for any type of approach; in fact, only the destination airport and temperature are required. Compensating the approach minimums bug simply determines where the minimums reference is displayed on the altimeter. No adjustment to the barometric altitude is made as a result of temperature compensating the minimums reference.

Figure 22 - Temperature Compensation of Minimum Altitude

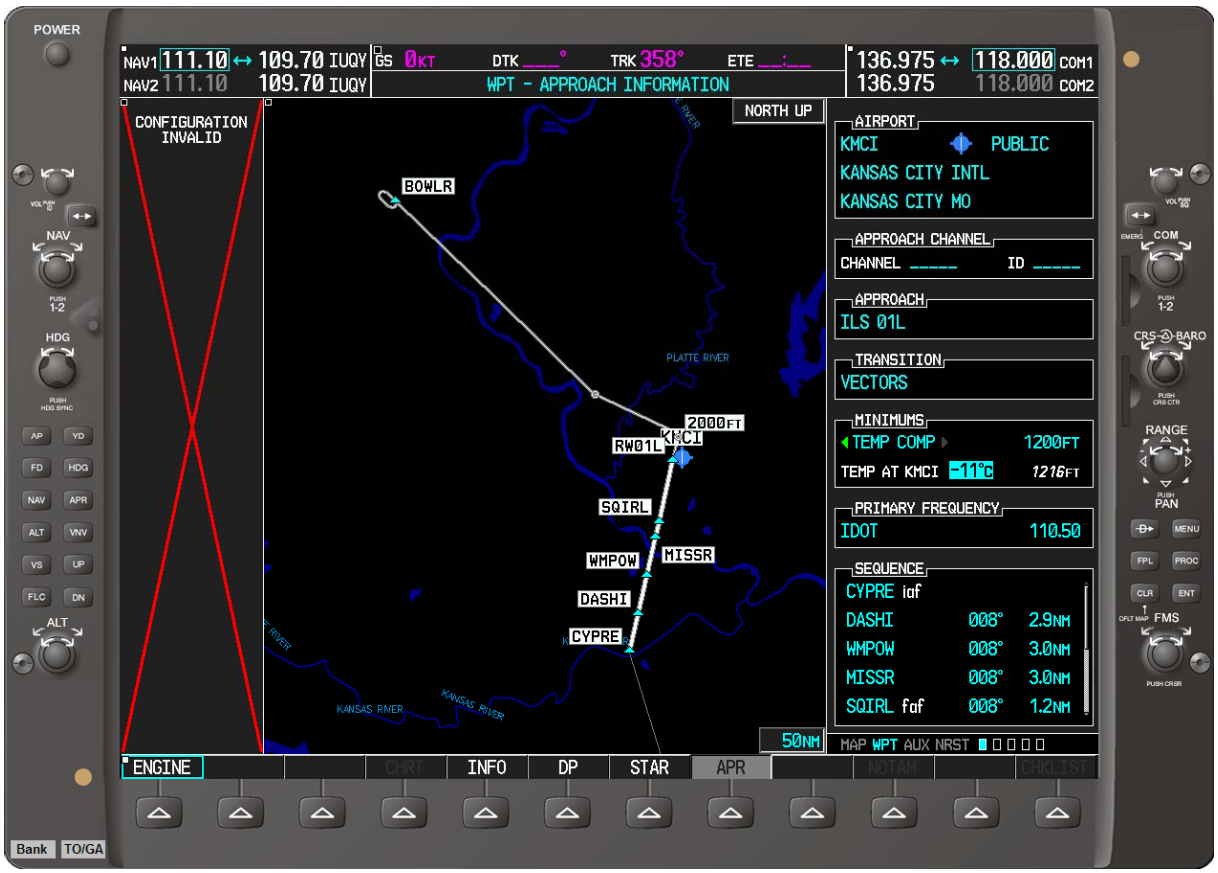


Figure 23 - Approach Window Temperature Compensated Minimum Altitude

Vertical Deviation Display

The vertical deviation for baro-VNAV approaches is displayed using a solid magenta symbol and "V" label (Figure 24), compared to the magenta diamond and "G" label used for SBAS approaches.

Figure 24 - Vertical deviation display with barometric approach vertical guidance

The full-scale deflection (FSD) for the vertical deviation indicator (VDI) used for approach baro-VNAV is the same as the full-scale used for an SBAS LNAV/VNAV approach and is shown in Figure 25. In order to assist flight crews in determining when vertical deviation exceeds ±75 feet, yellow bands have been added to the VDI display as depicted in Figure 26. The yellow deviation bands are displayed for LNAV/VNAV and RNP approaches only, and only between the FAF and MAP. The indication is displayed regardless of whether SBAS or baro altitude is the vertical guidance source.

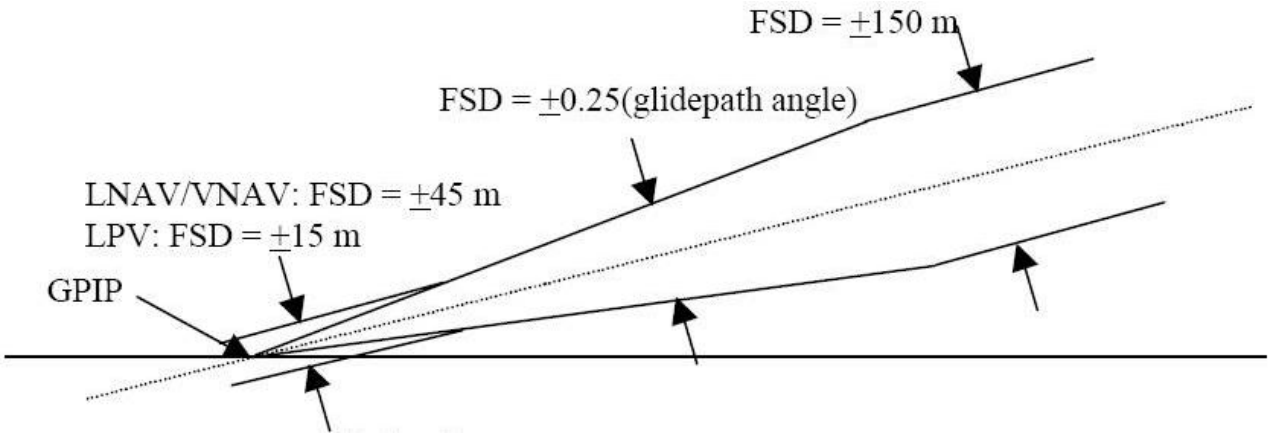


Figure 25 – VDI Scale for Baro-Altitude Based LNAV/VNAV Approach

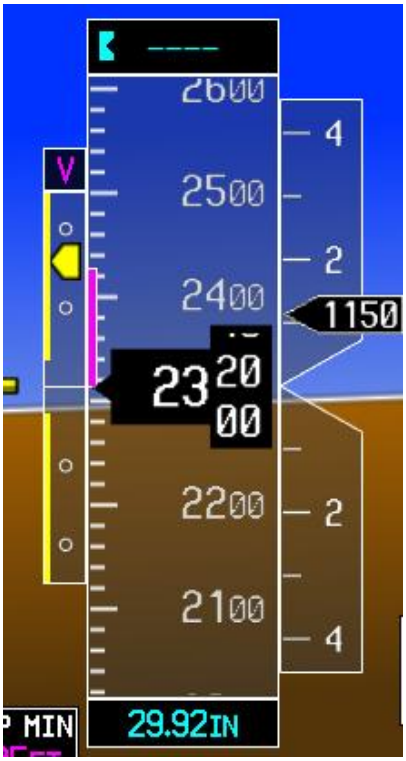


Figure 26 – Display of VDI Range Exceeding ±75 feet

Autopilot Interface

The GFC700 autopilot uses the GP mode via the APR button to follow approach baro-VNAV guidance as opposed to the VNAV mode via the VNV button. When coupled in GP mode, the autopilot will not capture a preselected altitude while tracking a baro-VNAV glidepath.

Approach Downgrades

For approaches with minimums that support both SBAS and baro altitude vertical guidance, downgrading or reverting to barometric altitude guidance is allowed prior to one minute before the FAF. If SBAS becomes unavailable after the approach is active but prior to 60 seconds before the FAF, an approach downgrade may be performed (e.g. LPV to LNAV/VNAV) or a vertical source reversion to baro altitude may be performed (e.g. SBAS LNAV/VNAV to baro LNAV/VNAV).

If a loss of SBAS occurs prior to 60 seconds before the FAF, the system will determine whether or not the approach mode can be supported using baro VNAV. If baro VNAV can be supported, the "*APR ADVISORY - SBAS VNAV not available. Using Baro VNAV.*" message will be displayed on the PFDs and the VDI will be flagged. If SBAS is required for the approach, the approach mode (e.g. LPV) will be shown in amber but the GPS/SBAS VDI will be displayed until one minute prior to the FAF. If the SBAS integrity has not been restored at one minute prior to the FAF, the system will display the "*APR DWNGRADE - Apr downgraded. Baro VNAV.*" message and flag the VDI.

Once the pilot acknowledges either message by viewing it on the PFD, the VDI will be restored using baro altitude vertical guidance instead of SBAS. There is no downgrade from SBAS to barometric altitude after the FAF or within one minute of the FAF; "LNAV" is the only downgrade option in those cases. For approaches using barometric vertical guidance, downgrade is not allowed; if altitude or temperature data becomes invalid, the vertical deviation will be flagged.

Sensor Failures

Outside Air Temperature (OAT) Probe

The OAT from the selected side Air Data Computer will be used. If the OAT becomes invalid the VDI on that side will be flagged as invalid. The crew must select the off-side Air Data Computer sensor and VDI will return regardless of if prior to or after the FAF.

Sensor Comparison Annunciation

The temperature compensated altitudes from the pilot and co-pilot side are continuously compared. If a miscompare of > 50 feet is detected the text "VDI MISCOMP" is displayed in the sensor comparison annunciation area on the PFD in black text with an amber background.

When a temperature compensated altitude is not available for comparison, a "VDI NO COMP" annunciation is posted in comparison annunciation area on the PFD in black text with a white background.

Refer to the VDI MISCOMPARE ON BARO VNAV APPROACHES (VDI MISCOMP on PFD) and the LOSS OF TEMPERATURE INPUT ON BARO VNAV APPROACHES (VDI NO COMP on PFD) procedures in the Abnormal Procedures Section for additional information.

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Section 8 – Handling, Service, and Maintenance

Refer to the G1000/GFC 700 System Maintenance Manual (contains Instructions for Continued Airworthiness) P/N 190-00716-01 Rev. 1 or later FAA approved revision for maintenance requirements for the G1000 system and components.